WATER SUPPLY OUTLOOK
and
FEDERAL - STATE - PRIVATE COOPERATIVE SNOW SURVEYS
for
WASHINGTON

UNITED STATES DEPARTMENT of AGRICULTURE···SOIL CONSERVATION SERVICE,
and
DEPARTMENT of CONSERVATION STATE of WASHINGTON

Data included in this report were obtained by the agencies named above in cooperation with the U.S. Forest Service, U.S. Geological Survey, National Park Service, and other Federal, State and private organizations.

AS OF
MAR. 1, 1965

UNITED STATES DEPARTMENT OF AGRICULTURE - SOIL CONSERVATION SERVICE

To Recipients of Water Supply Outlook Reports:

The climate of the cultivated and populated areas of the West is characterized by relatively dry summer months. Such precipitation as occurs falls mostly in the winter and early spring months when it is of little immediate benefit to growing crops. Most of this precipitation falls as mountain snow which stays on the ground for months, melting later to sustain streamflow during the period of greatest demand during late spring and summer. Thus, nature provides in mountain snow an imposing water storage facility.

The amount of water stored in mountain snow varies from place to place as well as from year to year and accordingly, so does the runoff of the streams. The best seasonal management of variable western water supplies results from advance estimates of the streamflow.

A snow survey consists of a series of about ten samples taken with specially designed snow sampling equipment along a permanently marked line, up to 1000 feet in length, called a snow course. The use of snow sampling equipment provides snow depth and water equivalent values for each sampling point. The average of these values is reported as the snow survey measurement for a snow course.

Snow surveys are made monthly or semi-monthly beginning in January or February and continue through the snow season until April, May or June. Currently more than 1400 western snow courses are measured each year. These measurements furnish the key data for water supply forecasts.

Streamflow forecasts are obtained by a comparison of total or maximum snow accumulation, as measured by snow water equivalent, to the subsequent spring and summer or snowmelt season runoff over a period of years. The snow water equivalent measured in selected snow courses provides most of the index to the streamflow forecast for the following season. More accurate forecasts are usually obtained when other factors such as soil moisture, base flow and spring precipitation are considered and included in the forecast procedure. Early season forecasts assume average climatic conditions through the snowmelt season.

Listed below are the Federal-State-Private Cooperative Snow Survey and Water Supply Forecast reports available for the West which contain detailed information on snow survey measurements, streamflow forecasts, reservoir storage, soil moisture and other guide data to water management and conservation decisions. Soil Conservation Service Reports may be secured from Soil Conservation Service, 511 N.W. Broadway - Room 507, Portland, Oregon 97209.

PUBLISHED BY SOIL CONSERVATION SERVICE

REPORTS	ISSUED	LOCATION	COOPERATING WITH
RIVER BASINS			
Western United States	Monthly (Feb.-May)	Portland, Oregon	All Cooperators
Basic Data Summary	October 1	Portland, Oregon	All Cooperators
STATES			
Alaska	Monthly (Mar.-May)	Palmer, Alaska	Alaska S.C.D.
Arizona	Semi-Monthly (Jan. 15 - Apr. 1)	Phoenix, Arizona	Salt R. Valley Water Users Assoc. Ariz. Agr. Exp. Station
Colorado and New Mexico	Monthly (Feb.-May)	Fort Collins, Colorado	Colo. State University Colo. State Engineer N. Mex. State Engineer
Idaho	Monthly (Jan.-June)	Boise, Idaho	Idaho State Reclamation Engineer
Montana	Monthly (Jan.-June)	Bozeman, Montana	Mont. Agr. Exp. Station
Nevada	Monthly (Jan.-May)	Reno, Nevada	Nevada Dept. of Conservation and Natural Resources - Division of Water Resources
Oregon	Monthly (Jan.-June)	Portland, Oregon	Oreg. State University Oregon State Engineer
Utah	Monthly (Jan.-June)	Salt Lake City, Utah	Utah State Engineer
Washington	Monthly (Feb.-June)	Spokane, Washington	Wn. State Dept. of Conservation
Wyoming	Monthly (Feb.-June)	Casper, Wyoming	Wyoming State Engineer

PUBLISHED BY OTHER AGENCIES

REPORTS	ISSUED	AGENCY
British Columbia	Monthly (Feb.-June)	Water Resources Service, Dept. of Lands, Forest and Water Resources, Parliament Bldg., Victoria, B.C., Canada
California	Monthly (Feb.-May)	Calif. Dept. of Water Resources, P.O. Box 388, Sacramento, Calif.

FEDERAL-STATE-COOPERATIVE
SNOW SURVEY AND WATER SUPPLY FORECASTS

For

WASHINGTON

Report Prepared
By

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Soil Conservation Service
U. S. Department of Agriculture

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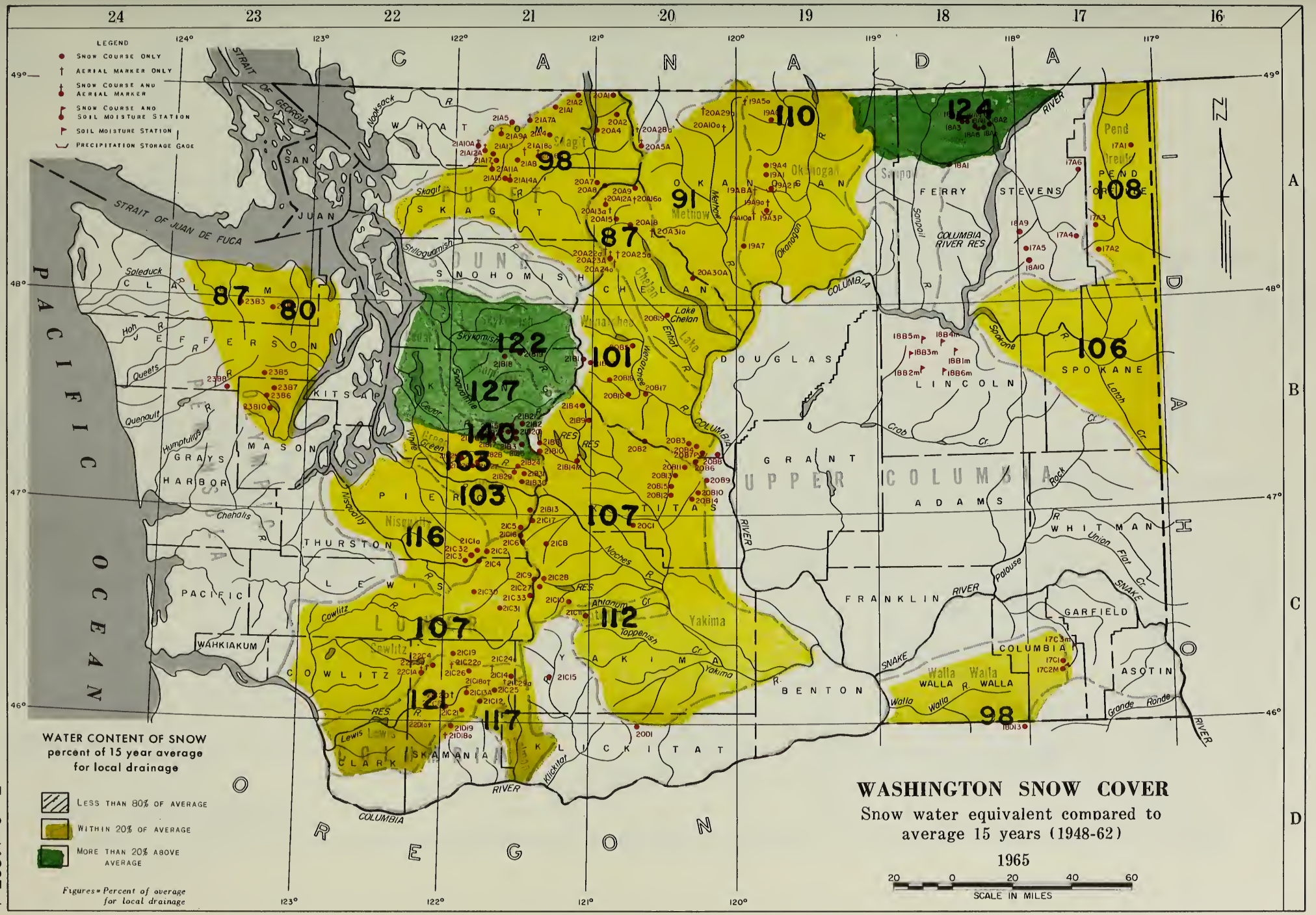
Department of Conservation
State of Washington



U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, PORTLAND, OREG. 1965 M-930
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INDEX to WASHINGTON SNOW COURSES, SOIL MOISTURE STATIONS and PRECIPITATION STORAGE GAGES

UPPER COLUMBIA DRAINAGE

Pend Oreille River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Boyer Mountain	17A2	7	31N	43E	5250
Bunchgrass Meadow	17A1	24	37N	44E	5000
Winchester Creek	17A3	30	33N	43E	2970

Kettle River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Boulder Road	18A2	36	39N	36E	1450
Butte Creek	18A3	28	39N	35E	4070
Cabin Creek	18A8	5	38N	36E	3170
Coat Creek	18A4	26	39N	35E	3595
Snow Caps Creek	18A5	3	38N	36E	2150
Snow Caps Trail	18A6	5	38N	36E	2720
Summit G. S.	18A7	20	39N	35E	4600

Colville River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Baird	17A6	19	36N	42E	3215
Carlson	18A9	34	32N	38E	2885
Chewelah	17A4	11	32N	41E	4925
Stranger Mountain	17A5	26	31N	38E	4990
Togo	18A10	6	29N	38E	3370

Sanpoil River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Sherman Creek Pass	18A1	19	36N	35E	5350

Okanogan River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Clark	19A8a	2	36N	23E	7000
Muckamuck	19A9a	20	36N	24E	6750
Mutton Creek No. 1	19A1	30	37N	24E	5700
Mutton Creek No. 2	19A4	19	37N	24E	6000
Paysayten	20A28a	32	40N	18E	4300
Rusty Creek	19A3P	18	35N	24E	4000
Salmon Meadows	19A2P	33	37N	24E	4500
Starvation Mtn.	19A10a	15	35N	23E	6750
Touts Coulee	19A6	30	39N	25E	2845

Methow River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Billy Goat Pass	20A10a	10	38N	20E	6400
Dollar Watch	20A29a	8	39N	20E	7000
Harts Pass	20A5A	7	37N	18E	6500
Horseshoe Basin	19A5a	15	40N	23E	7000
Loup Loup	19A7	36	34N	23E	4650

Chelan Lake Basin

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Bridge Creek	20A15	20	34N	16E	2100
Bullion	20A18	2	33N	16E	1460
Cloudy Pass-	20A22a	12	31N	15E	6500
Greenwood Flat	20A25a	3	31N	16E	3540
Little Meadows	20A24a	8	31N	16E	5275
Lyman Lake	20A23A	18	31N	16E	5900
Park Creek Flat	20A13a	18	34N	16E	2220
Park Creek Ridge	20A12A	7	34N	16E	4600
Petersons	20A16a	3	34N	17E	3730
Rainy Pass	20A9	21	35N	17E	4780
Safety Harbor	20A30A	32	31N	20E	6300
War Creek Pass	20A31a	34	33N	18E	6500

Entiat River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Brief	20B19	34	28N	19E	1600

Wenatchee River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Berne-Mill Creek	21B23	7	26N	15E	2925
Blewett Pass No. 2	20B2	35	22N	17E	4270
Chiwaukum C. S.	20B16	4	25N	17E	1810
Lake Wenatchee	20B5	33	27N	17E	1970
Leavenworth R. S.	20B17	1	24N	17E	1127
Merritt	20B18	4	26N	16E	2140
Stevens Pass	21B1	14	26N	13E	4070

Squilchuck Creek

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Beehive Springs	20B3	12	21N	19E	4400
Scout-A-Vista	20B4	18	21N	20E	3400

Stemilt Creek

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Jump-Off	20B8	34	21N	20E	4450
Stemilt Slide	20B6	30	21N	20E	5000
Upper Wheeler	20B7P	30	21N	20E	4400

Crab Creek

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Creston-Kunz	18B1m	32	27N	34E	2440
Govan	18B2m	20	26N	32E	2050
Jack Woods	18B3m	28	27N	31E	2750
Krause	18B4m	21	27N	33E	2420
Sheffels	18B5m	17	27N	32E	2378
Wheatridge	18B6m	24	25N	32E	2290

Yakima River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Ahtanum R. S.	21C11	26	12N	14E	3100
Big Boulder Creek	21B9	35	23N	14E	3200
Bumping Lake	21C8	23	16N	12E	3450
Clockum Pass	20B9	25	20N	20E	5370
Cooke Creek	20B10	17	19N	20E	4123
Fish Lake	21B4	34	24N	14E	3371
Green Lake	21C10	3	12N	13E	6000
Crouse Camp	20B11	29	21N	19E	5385
High Creek	20B12	34	20N	19E	2930
Lake Cle Elum	21B14M	15	20N	14E	2200
Manashtash	20C1	24	17N	16E	3935
Morse Lake	21C17	6	16N	11E	5400
Nanum	20B13	4	20N	19E	3875
Trail Creek	20B14	20	19N	20E	3360
Tunnel Avenue	21B8	13	21N	11E	2450
Walters Flat	20B15	22	20N	19E	3360
White Pass	21C9	2	13N	11E	4500
White Pass (East Side)	21C28	2	13N	11E	4500
White Pass (Leach Lake)	21C27	1	13N	11E	4500

LOWER COLUMBIA DRAINAGE

Mill Creek

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Couse	17C3m	2	9N	35E	3370
Homestead	17C1	11	9N	40E	4030
Martin Springs (Helmers SM)	17C2M	23	9N	40E	4400
Walla Walla Diversion	18D13	22	6N	38E	2400

Klickitat River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Satus Pass	20D1	21	6N	17E	4030
West Fork Cabin	21C15	23	9N	12E	3000

White Salmon River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Cultus Creek	21C12	35	7N	8E	4000

Lewis River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Blue Lake	21C22a	19	9N	8E	4800
Bob's Trail	21C21	25	8N	7E	2200
Calamity Ridge	22D1a	8	5N	5E	2500
Council Pass	21C18a	24	9N	9E	4200
Divide Meadow	21C29a	21	9N	10E	5600
Grand Meadow	21C25	28	8N	9E	3500
Lone Pine Shelter	21C26	8	9N	7E	3800
Marble Mountain	22C5a	24	8N	5E	3200
New Muddy River	22C6	36	8N	6E	2000
Oldman Pass	21D19	22	6N	7E	3100

Lewis River (continued)

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Plains of Abraham	22C1a	35	9N	5E	4400
Smith Creek Road	22C4	29	9N	6E	2100
Spencer Meadow	21C20a	16	8N	7E	3400
Surprise Lakes	21C13A	14	7N	8E	4250
Table Mountain	21C24a	20	9N	9E	4200
Timbered Peak	21D18a	36	6N	6E	3000

Cowlitz River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Cayuse Pass	21C6	15	16N	10E	5300
Mosquito Meadows	21C19	33	10N	7E	4100
Ohanapecosh	21C32	28	15N	10E	2200
Packwood Lake	21C31	21	13N	10E	2870
Pigtail Peak	21C33	11	13N	11E	5900
Potato Hill	21C14	36	10N	10E	4500
Willame Creek	21C30	3	13N	8E	3250

PUGET SOUND DRAINAGE

Nisqually River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Ghost Forest	21C4	23	15N	8E	4550
Longmire	21C3	29	15N	8E	2760
Paradise Park	21C2	13	15N	8E	5500
Stem Clade	21C1	13	15N	8E	5050

White River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Corral Pass	21B13	30	18N	11E	6000
White River Entrance	21C5	4	16N	10E	3600
White River Entrance (new)	21C16	4	16N	10E	3400

Green River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Airstrip	21B24	18	20N	11E	1800
Charley Creek	21B25	27	21N	8E	1200
Grass Mountain No. 1	21B26	21	20N	8E	4000
Grass Mountain No. 2	21B27	14	20N	8E	2900
Grass Mountain No. 3	21B28	12	20N	8E	2100
Lester Creek	21B29	36	20N	10E	3100
Sawmill Ridge	21B31	5	19N	11E	4700
Stampede Pass	21B10	25	21N	11E	3000
Twin Camp	21B30	18	19N	11E	4100

Cedar River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
City Cabin	21B3	10	21N	10E	2390
Mt. Cardner	21B21	30	22N	10E	3300
Mt. Cardner Aux.	21B22	31	22N	10E	2500
Mt. Lindsay	21B16	31	22N	9E	2500
Mt. Washington	21B15	8	22N	9E	3000
Rex River	21B17	11	21N	9E	2400
South Fork Cedar	21B6	24	21N	10E	3000
Tinkham Creek	21B20	1	21N	10E	3400

Snoqualmie River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Olallie Meadows	21B2	19	22N	11E	3625
South Fork Tolt	21B18	26	26N	9E	1900

Skykomish River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Lake Elizabeth	21B19	33	26N	10E	2900

Skagit River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Beaver Creek Trail	21A4	35	39N	12E	2200
Beaver Pass	21A1	9	39N	12E	3680
Devils Park	20A4	34	38N	16E	5900
Freezeout Creek Trail	20A1	14	40N	14E	3500
Freezeout Meadows	20A2	8	40N	16E	5000
Lake Hozomeen	21A2	19	40N	14E	2600
Meadows Cabins	20A8	29	36N	14E	1900
Thunder Basin	20A7	15	35N	14E	4200

Boker River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Dock Butte	21A11A	8	36N	8E	3800
Easy Pass	21A7A	19	39N	11E	5200
Jasper Pass	21A6A	17	38N	11E	5400
Marten Lake	21A9A	23	38N	8E	3600
Mount Blum	21A18a	27	38N	10E	5800
Rocky Creek	21A12A	20	37N	8E	2100
Schreibers Meadow	21A10A	18	37N	8E	3400
S. F. Thunder Creek	21A14A	20	36N	9E	2200
Sulphur Creek	21A13	22	37N	8E	1600
Three Mile Creek	21A15	18	36N	9E	1600
Watson Lakes	21A8	25	37N	9E	4500

Nooksack River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Panorama	21A5	17	39N	9E	4300

OLYMPIC PENINSULA

Dungeness River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Deer Park	23B4	1	28N	5W	5200

Elwho River

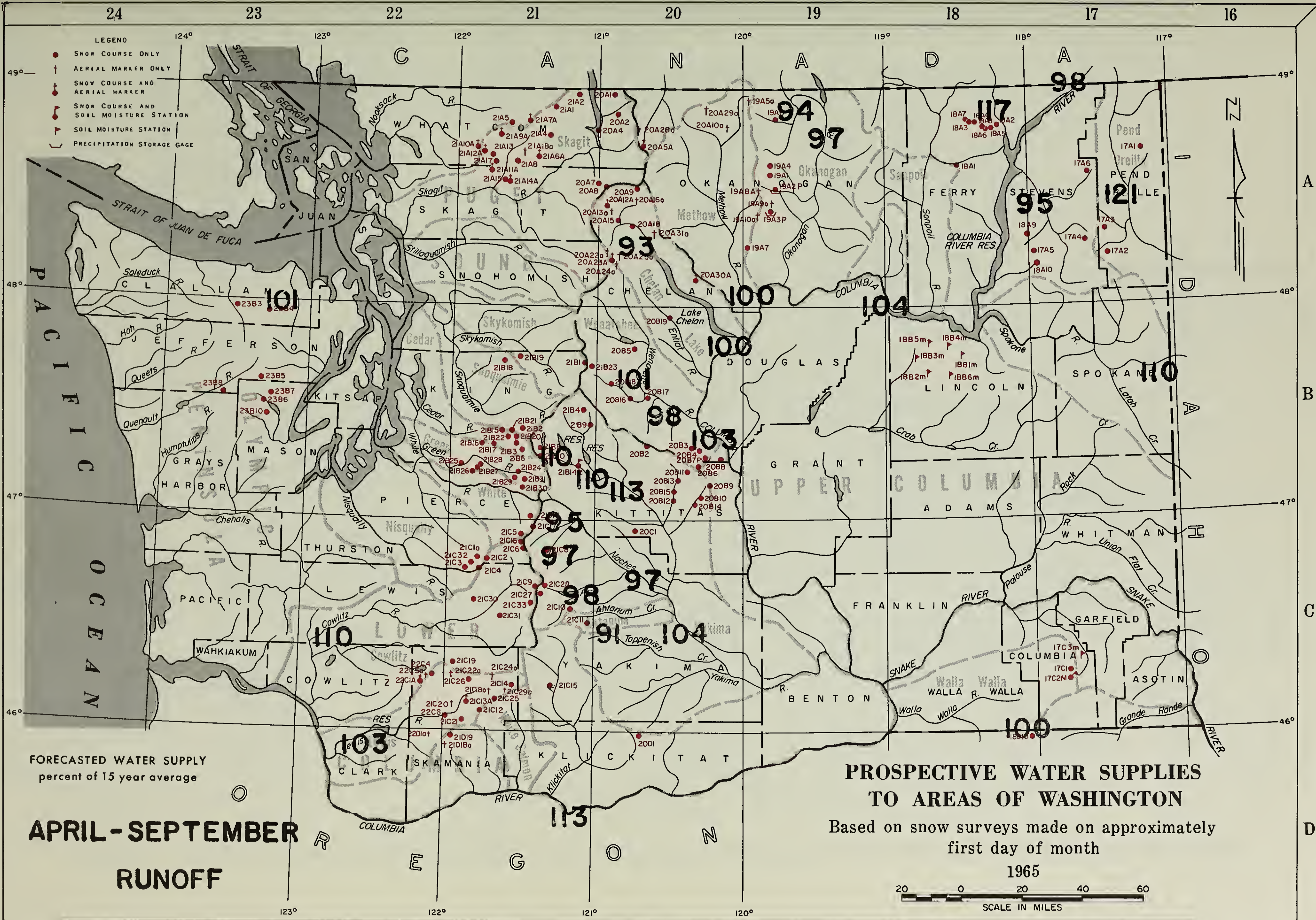
NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Hurricane	23B3	36	29N	7W	4500

Skokomish River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Black and White	23B7	17	24N	5W	4200
Black and White Lakes	23B6	16	24N	5W	4700
Four Stream	23B10	1	23N	6W	3000
Home Sweet Home	23B5	28	25N	5W	5200
Sundown Pass	23B8	25	24N	7W	3900

LEGEND
NUMBERING SYSTEM EXAMPLE

21A7 SNOW COURSE ONLY
21A7a AERIAL MARKER ONLY
21A7A SNOW COURSE AND AERIAL MARKER
21A7M SNOW COURSE AND SOIL MOISTURE STATION
21A7m SOIL MOISTURE STATION
21A7P SNOW COURSE AND PRECIPITATION STORAGE GAGE
21A7p PRECIPITATION STORAGE GAGE



U.S. DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE USDA SCS PORTLAND OREG 1964 M-929

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UPPER COLUMBIA DRAINAGE

Pend Oreille River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Boyer Mountain	17A2	7	31N	43E	5250
Bunchgrass Meadow	17A1	24	37N	44E	5000
Winchester Creek	17A3	30	33N	43E	2970

Kettle River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Boulder Road	18A2	36	39N	36E	1450
Butte Creek	18A3	28	39N	35E	4070
Cabin Creek	18A8	5	38N	36E	3170
Goat Creek	18A4	26	39N	35E	3595
Snow Caps Creek	18A5	3	38N	36E	2150
Snow Caps Trail	18A6	5	38N	36E	2720
Summit C. S.	18A7	20	39N	35E	4600

Colville River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Baird	17A6	19	36N	42E	3215
Carlson	18A9	34	32N	38E	2885
Chewelah	17A4	11	32N	41E	4925
Stranger Mountain	17A5	26	31N	38E	4990
Togo	18A10	6	29N	38E	3370

Sanpoil River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Sherman Creek Pass	18A1	19	36N	35E	5350

Okonogan River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Clark	19A8a	2	36N	23E	7000
Muckamuck	19A9a	20	36N	24E	6750
Mutton Creek No. 1	19A1	30	37N	24E	5700
Mutton Creek No. 2	19A4	19	37N	24E	6000
Paysayten	20A28a	32	40N	18E	4300
Rusty Creek	19A3P	18	35N	24E	4000
Salmon Meadows	19A2P	33	37N	24E	4500
Starvation Mtn.	19A10a	15	35N	23E	6750
Touts Coulee	19A6	30	39N	25E	2845

Methow River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Billy Coat Pass	20A10a	10	38N	20E	6400
Dollar Watch	20A29a	8	39N	20E	7000
Harts Pass	20A5A	7	37N	18E	6500
Horseshoe Basin	19A5a	15	40N	23E	7000
Loup Loup	19A7	36	34N	23E	4650

Chelan Lake Basin

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Bridge Creek	20A15	20	34N	16E	2100
Bullion	20A18	2	33N	16E	1460
Cloudy Pass-	20A22a	12	31N	15E	6500
Greenwood Flat	20A25a	3	31N	16E	3540
Little Meadows	20A24a	8	31N	16E	5275
Lyman Lake	20A23A	18	31N	16E	5900
Park Creek Flat	20A13a	18	34N	16E	2220
Park Creek Ridge	20A12A	7	34N	16E	4600
Petersons	20A16a	3	34N	17E	3730
Rainy Pass	20A9	21	35N	17E	4780
Safety Harbor	20A30A	32	31N	20E	6300
War Creek Pass	20A31a	34	33N	18E	6500

Entiat River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Brief	20B19	34	28N	19E	1600

Wenatchee River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Berne-Mill Creek	21B23	7	26N	15E	2925
Blewett Pass No. 2	20B2	35	22N	17E	4270
Chiwaukum G. S.	20B16	4	25N	17E	1810
Lake Wenatchee	20B5	33	27N	17E	1970
Leavenworth R. S.	20B17	1	24N	17E	1127
Merritt	20B18	4	26N	16E	2140
Stevens Pass	21B1	14	26N	13E	4070

Squilchuck Creek

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Beehive Springs	20B3	12	21N	19E	4400
Scout-A-Vista	20B4	18	21N	20E	3400

Stemilt Creek

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Jump-Off	20B8	34	21N	20E	4450
Stemilt Slide	20B6	30	21N	20E	5000
Upper Wheeler	20B7P	30	21N	20E	4400

Crab Creek

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Creston-Kunz	18B1m	32	27N	34E	2440
Covan	18B2m	20	26N	32E	2050
Jack Woods	18B3m	28	27N	31E	2750
Krause	18B4m	21	27N	33E	2420
Sheffels	18B5m	17	27N	32E	2378
Wheatridge	18B6m	24	25N	32E	2290

Yokima River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Ahtanum R. S.	21C11	26	12N	14E	3100
Big Boulder Creek	21B9	35	23N	14E	3200
Bumping Lake	21C8	23	16N	12E	3450
Clockum Pass	20B9	25	20N	20E	5370
Cooke Creek	20B10	17	19N	20E	4123
Fish Lake	21B4	34	24N	14E	3371
Green Lake	21C10	3	12N	13E	6000
Crouse Camp	20B11	29	21N	19E	5385
High Creek	20B12	34	20N	19E	2930
Lake Cle Elum	21B14M	15	20N	14E	2200
Manashtash	20C1	24	17N	16E	3935
Morse Lake	21C17	6	16N	11E	5400
Nanum	20B13	4	20N	19E	3875
Trail Creek	20B14	20	19N	20E	3360
Tunnel Avenue	21B8	13	21N	11E	2450
Walters Flat	20B15	22	20N	19E	3360
White Pass	21C9	2	13N	11E	4500
White Pass (East Side)	21C28	2	13N	11E	4500
White Pass (Leach Lake)	21C27	1	13N	11E	4500

LOWER COLUMBIA DRAINAGE

Mill Creek

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Couse	17C3m	2	9N	35E	3370
Homestead	17C1	11	9N	40E	4030
Martin Springs (Helmers SM)	17C2M	23	9N	40E	4400
Walla Walla Diversion	18D13	22	6N	38E	2400

Klickitat River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Satus Pass	20D1	21	6N	17E	4030
West Fork Cabin	21C15	23	9N	12E	3000

White Salmon River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Cultus Creek	21C12	35	7N	8E	4000

Lewis River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Blue Lake	21C22a	19	9N	8E	4800
Bob's Trail	21C21	25	8N	7E	2200
Calamity Ridge	22D1a	8	5N	5E	2500
Council Pass	21C18a	24	9N	9E	4200
Divide Meadow	21C29a	21	9N	10E	5600
Grand Meadow	21C25	28	8N	9E	3500
Lone Pine Shelter	21C26	8	9N	7E	3800
Marble Mountain	22C5a	24	8N	5E	3200
New Muddy River	22C6	36	8N	6E	2000
Oldman Pass	21D19	22	6N	7E	3100

Lewis River (continued)

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Plains of Abraham	22C1a	35	9N	5E	4400
Smith Creek Road	22C4	29	9N	6E	2100
Spencer Meadow	21C20a	16	8N	7E	3400
Surprise Lakes	21C13A	14	7N	8E	4250
Tablo Mountain	21C24a	20	9N	9E	4200
Timbered Peak	21D18a	36	6N	6E	3000

Cowlitz River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Cayuse Pass	21C6	15	16N	10E	5300
Mosquito Meadows	21C19	33	10N	7E	4100
Ohanapecosh	21C32	28	15N	10E	2200
Packwood Lake	21C31	21	13N	10E	2870
Pigtail Peak	21C33	11	13N	11E	5900
Potato Hill	21C14	36	10N	10E	4500
Willame Creek	21C30	3	13N	8E	3250

PUGET SOUND DRAINAGE

Nisqually River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Ghost Forest	21C4	23	15N	8E	4550
Longmire	21C3	29	15N	8E	2760
Paradise Park	21C2	13	15N	8E	5500
Stem Clade	21C1	13	15N	8E	5050

White River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Corral Pass	21B13	30	18N	11E	6000
White River Entrance	21C5	4	16N	10E	3600
White River Entrance (new)	21C16	4	16N	10E	3400

Green River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Airstrip	21B24	18	20N	11E	1800
Charley Creek	21B25	27	21N	8E	1200
Grass Mountain No. 1	21B26	21	20N	8E	4000
Crass Mountain No. 2	21B27	14	20N	8E	2900
Grass Mountain No. 3	21B28	12	20N	8E	2100
Lester Creek	21B29	36	20N	10E	3100
Sawmill Ridge	21B31	5	19N	11E	4700
Stampede Pass	21B10	25	21N	11E	3000
Twin Camp	21B30	18	19N	11E	4100

Cedar River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
City Cabin	21B3	10	21N	10E	2390
Mt. Cardner	21B21	30	22N	10E	3300
Mt. Gardner Aux.	21B22	31	22N	10E	2500
Mt. Lindsay	21B16	31	22N	9E	2500
Mt. Washington	21B15	8	22N	9E	3000
Rex River	21B17	11	21N	9E	2400
South Fork Cedar	21B6	24	21N	10E	3000
Tinkham Creek	21B20	1	21N	10E	3400

Snoqualmie River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Olallie Meadows	21B2	19	22N	11E	3625
South Fork Tolt	21B18	26	26N	9E	1900

Skykomish River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Lake Elizabeth	21B19	33	26N	10E	2900

Skagit River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Beaver Creek Trail	21A4	35	39N	12E	2200
Beaver Pass	21A1	9	39N	12E	3680
Devils Park	20A4	34	38N	16E	5900
Freezeout Creek Trail	20A1	14	40N	14E	3500
Freezeout Meadows	20A2	8	40N	16E	5000
Lake Hozomeen	21A2	19	40N	14E	2600
Meadows Cabins	20A8	29	36N	14E	1900
Thunder Basin	20A7	15	35N	14E	4200

Baker River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Dock Butte	21A11A	8	36N	8E	3800
Easy Pass	21A7A	19	39N	11E	5200
Jasper Pass	21A6A	17	38N	11E	5400
Marten Lake	21A9A	23	38N	8E	3600
Mount Blum	21A18a	27	38N	10E	5800
Rocky Creek	21A12A	20	37N	8E	2100
Schreibers Meadow	21A10A	18	37N	8E	3400
S. F. Thunder Creek	21A14A	20	36N	9E	2200
Sulphur Creek	21A13	22	37N	8E	1600
Three Mile Creek	21A15	18	36N	9E	1600
Watson Lakes	21A8	25	37N	9E	4500

Nooksack River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Panorama	21A5	17	39N	9E	4300

OLYMPIC PENINSULA

Dungeness River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Deer Park	23B4	1	28N	5W	5200

Elwha River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Hurricane	23B3	36	29N	7W	4500

Skokomish River

NAME	NUMBER	SEC.	TWP.	RANGE	ELEV.
Black and White	23B7	17	24N	5W	4200
Black and White Lakes	23B6	16	24N	5W	4700
Four Stream	23B10	1	23N	6W	3000
Home Sweet Home	23B5	28	25N	5W	5200
Sundown Pass	23B8	25	24N	7W	3900

LEGEND

NUMBERING SYSTEM EXAMPLE

21A7 SNOW COURSE ONLY

21A7a AERIAL MARKER ONLY

21A7A SNOW COURSE AND AERIAL MARKER

21A7M SNOW COURSE AND SOIL MOISTURE STATION

21A7m SOIL MOISTURE STATION

21A7P SNOW COURSE AND PRECIPITATION STORAGE GAGE

21A7p PRECIPITATION STORAGE GAGE

WATER SUPPLY OUTLOOK

State of Washington
March 1, 1965

* *
* The water supply outlook for irrigation and power in Washington *
* and the Columbia Basin is still considered good for this time of *
* year. The heavy snowfall and high elevation precipitation which *
* occurred during the latter part of December and January has not *
* continued throughout the month of February. Much of the snow *
* that fell early in the season was thoroughly wetted by rains and *
* above normal temperatures and some has run off with damaging ef- *
* fects. The effect of these storm patterns has been to ripen the *
* snow at all elevations in the mountain watersheds early in the *
* season and prime the soils for good runoff conditions. Abnormal *
* snowpacks reported last month have been depleted to nearly normal *
* conditions as of the first of March. The range of snow cover is *
* from 20% below normal to 40% above. Precipitation during the *
* month of February was below normal with the exception of the *
* northwest slope of the Cascades. Water in storage behind irriga- *
* tion and power reservoirs is generally above normal or is expect- *
* ed to comfortably fill with the spring runoff. *
* *

PEND OREILLE RIVER

There are up to 13 courses on the Pend Oreille-Spokane drainages which can be used for comparison purposes. These snow courses with up to 40 years of record, indicate a snowpack that is 18% above last year, 126% above 1963 and 8% above normal for the Pend Oreille. The Spokane River has a pack that is 12% above last year 132% above 1963 and 6% above normal. Precipitation in this area during the month of February was 28% below normal but for the total winter season, 14% above.

Streamflow forecasts for these watersheds are for flows during the April-September period of 121% of normal for the Pend Oreille River as measured below Box Canyon and 110% for the Spokane at Post Falls. Reservoir storage in Coeur d'Alene Lake is very close to that which occurred in 1963 and also the 1948-62 normal.

COLVILLE-KETTLE RIVERS

The general outlook for the Colville and Kettle watersheds is for adequate irrigation water supplies during the 1965 runoff season. The snowpack is above normal in Canada which is the headwaters of the Kettle and well above what occurred during the last two years

on the Colville River. Very little melting has occurred at any elevation in these two watersheds. No information is available for water supply conditions on the Sanpoil River but it is assumed that they are similar.

The snowcover on the Kettle River, as measured by 11 courses with up to 25 years of record, indicates a snowpack that is 28% above last year, 156% above that which occurred in 1963 at this time and 24% above average. The Colville River, as measured by 5 courses with up to 6 years of record, has a snowpack that is 29% greater than last year at this time and 432% greater than what occurred in 1963. Records are not long enough to determine comparisons with average in this watershed. Many of the snow courses measured in 1963 were entirely bare of snow as of the first of March.

Although there are no soil moisture stacks in this area, valley precipitation continues to give a good indication. Fall precipitation in this area was 10% below normal, February precipitation 36% below normal, but the total of December, January and February precipitation was 14% greater. This increase in valley precipitation is indicated by the above normal snowpacks measured in the mountains. Although the soils will not be as saturated as could be hoped for this may have a tendency to slow down runoff when the spring melt occurs.

Flow of the Kettle River during the month of February was 5% greater than normal and the Columbia River at International Boundary 11% greater. Forecasts for the Kettle River, as measured near Laurier, is for a flow of 2,400,000 acre feet for the April-September period, or 17% greater than normal. The Colville as measured at Kettle Falls is expected to flow 178,000 acre feet, or only 95% of normal. The mainstem of the Columbia, as measured at Birchbank in Canada, is expected to flow 44,100,000 acre feet, or 98% of normal. Forecasts for the other periods can be found elsewhere in this report.

OKANOGAN-METHOW RIVERS

The outlook for irrigation and water supply in these watersheds is for mixed blessings--some streams are expected to have adequate amounts of water and some inadequate. Water from Okanogan lakes should be well above normal and that from the Similkameen, below. The Methow should have adequate runoff but the flow into Salmon Lake and Conconully Reservoir is expected to be well below normal. Spectacle Lake Irrigation District should also feel the pinch of inadequate water supplies during 1965.

Snow cover of the Okanogan River taken as a whole and measured by 20 snow courses with from 2 to 25 years of record indicates a snowpack that is 98% of 1964, 178% of 1963 and 10% greater than normal. The Methow River, measured by 9 courses with 7 to 22 years of record is the same as last year, 73% greater than 1963 and 9% less than normal. Additional information was expected to be gathered from the War Creek Pass aerial stadia snow survey marker in the Methow

drainage this year but it appears that this marker, which was 12 feet high, is completely buried in the snow. An extension will be placed on this marker this summer which should make it operational in 1966.

The one soil moisture station that has any length of record on this watershed is located in Canada. Although reports are delayed from this station, the previous month's record does give some indication. Soil mantle is still very dry in this area and drier than last year at this time but better than that which occurred in 1963. Precipitation, another indication of soil moisture, was below normal for the fall months, well below normal during February (59%), but 13% greater for the total winter season. Dry soils in this area could reduce spring runoff.

Flow of the Okanogan River during the month of February was 92% of normal. The Similkameen had a flow that was 101%. Forecast for the Similkameen River for the April-September period is for a flow of 1,565,000 acre feet, or 94% of normal; the Okanogan at Oroville is expected to flow 545,000 acre feet or 110% of normal. The combined flow of these two rivers as measured near Tonasket is for a flow of 1,900,000 acre feet or 97% of normal. The Methow as measured near Pateros is expected to flow 1,180,000 acre feet or 100% of normal for the same period. Forecasts for other periods can be found elsewhere in this report.

The two small reservoirs, Conconully and Salmon Lake on Salmon Creek drainage, have less water in storage than normal for this time of year and less than last year at this time. With the reduced inflow into these reservoirs, water management will have to be very careful during the runoff and irrigation season.

WENATCHEE-CHELAN-ENTIAT RIVERS

The outlook for irrigation and power water supplies in the Chelan, Entiat and Wenatchee watersheds is for normal or below spring runoff. Snow cover in this area varies from 1% above normal in Wenatchee to 13% below for the Chelan. Insufficient records are available for the Entiat watershed to be used for comparison purposes.

There are 9 snow courses with up to 15 years of record on the Chelan Lake watershed used in this comparison. One snow course is measured from the ground; the rest are measured by aerial stadia snow survey markers. These courses indicate a snowpack that is 17% below last year, 75% greater than 1963 and 13% below average. The Wenatchee River, measured by 9 snow courses with up to 20 years of record, has a snowpack that is 4% below last year, 256% greater than 1963 and 1% greater than average. Snow courses on Squilchuck Creek have only 10 years of record but indicate a snowpack that is better than the total years of record and last year. Stemilt Creek snow courses are also better than last year but have insufficient years of record to be used for average.

Precipitation, which is an indication of soil moisture, was below normal during the fall months and 40% below normal during the month of February but with the heavy rains of December and January, the winter precipitation picture as measured by valley stations was 15% above normal. The soil mantle should be wetted to near normal condition from these heavy rains of December and January, assisting in the spring runoff.

Forecasts of streamflow, which can be found elsewhere in the report, range from 7% below normal to 1% above. The Stemilt Basin does not have a normal but it is expected to flow 126,000 miners' inches during the May-September period which is below that which occurred both 1963 and 1962.

YAKIMA RIVER

The outlook for irrigation and water supply in the Yakima watershed as of March 1 has depleted markedly from that which was reported last month. Very little precipitation occurred either at valley stations or in the mountains in the form of snow. In fact, a record low precipitation amount was achieved at the Yakima City Weather Bureau station. With the amount of water stored in the reservoirs, adequate supplies can be expected during the irrigation season.

There are 22 snow courses with up to 45 years of record in the Yakima River watershed that are used for comparison purposes. These courses on the first of March had a snowpack that was 4% greater than that which occurred in 1964, 239% greater than that which was measured in 1963 and 7% greater than average. Ahtanum Creek, measured by only 2 snow courses with up to 20 years of record, has snowcover 33% greater than last year, 116% greater than 1963 and 12% greater than average. The snow cover has been greatly depleted since last month at which time the Yakima was 23% greater than normal.

The one soil moisture station in the Yakima watershed with any length of record indicates a soil mantle that is wetted up similar to last year at this time but less than in 1963--the reason probably being that the snow in this area has not melted and run into the ground. Valley precipitation was below normal during the months of September, October and November, above during the months of December and January, but below normal this past month.

Streamflow forecasts can be found elsewhere in this report, ranging from a high of 115% of normal to a low of 91%, these are for the April-September period. Flow of the Yakima River as measured at Kiona during the month of February was 200% of normal. With the greater than normal amounts of water in storage, outflow from the reservoirs has been very close to the inflow. "An early spring runoff would cause much wasting of water with the limited total storage capacity and give less hold-over storage next fall", reported the Project Superintendent, U. S. Bureau of Reclamation at Yakima.

WALLA WALLA

The spring and summer flow of streams in the Walla Walla watershed should be adequate for irrigators during the runoff season of 1965. The heavy storms of December and January put above normal amounts of water on the watershed and primed the snowpack as well as the soil. The disastrous floods which occurred during December removed some of this snow but left a pack that is now 98% of normal in the Washington portion of the watershed and 105% of average in the Oregon portion. Average increases failed to occur during the month of February so that the snowpack is not as great in relation to normal as was reported last month at this time.

There are 3 snow courses in the Washington portion of this watershed with up to 11 years of record. These courses indicate a snowpack that is 17% below that which occurred last year at this time and 2% below normal. During 1963 there was no snow on any of these snow courses so the percentage figure would infinite.

There are 4 soil moisture stations in the Walla Walla watershed that were measured near the first of March. These stations indicate a soil mantle that is 86% of capacity and well above that which was measured last year at this time. The Tollgate station has a slightly less amount of water in the soil mantle than was recorded during the last two years.

Forecasts of streamflow for Mill Creek are for normal flows during the April-September period; the southern portion of the Walla Walla River as measured near Milton is expected to flow 80,000 acre feet for the April-September period, or 5% above average, Streamflow during the month of February for the Walla Walla as measured at Touchet was 43% greater than normal. Flow of the Umatilla during the month of February was more than double the average.

LOWER COLUMBIA

The outlook for water supply in the Lower Columbia portion of the State is for continued good flow during the spring and summer runoff period. The snow cover is well above normal and above that which was measured during the last two years. Precipitation was below normal during February but above for the winter season.

There are 18 snow courses with up to 20 years of record on the Lewis River that are measured on the first of March. These snow courses have a snowpack that is 16% above last year, 430% above 1963 and 21% above average. The Cowlitz with 10 courses and up to 21 years of record has a snowcover that is 14% greater than last year, 324% greater than 1963 and 7% greater than normal. The snow in this area is very dense because of the precipitation that occurred in the form of rain at high elevations and above normal temperatures.

Winter precipitation in this area was 72% below normal during the month of February but 25% above normal for the months of December through February. Fall precipitation in this area was slightly below normal. Forecasts of streamflow for the Lewis River as measured at Ariel for the period April-September were for flows of 1,500,000 acre feet or 3% above normal. The Cowlitz River as measured at Castle Rock is expected to flow 3,250,000 acre feet or 110% of normal. Forecasts for other periods can be found elsewhere in this report. During the month of February runoff of the Cowlitz was 27% greater than normal, the Wind River had runoff that was 8% below normal and the Klickitat 4% greater.

PUGET SOUND

The outlook for water supplies on those streams flowing west into Puget Sound are generally the best of any in the state measured on March 1. The snow cover ranges from 2% below normal to 40% above on these watersheds.

The Nisqually River watershed as measured by 4 courses has a snowpack that is 16% greater than normal; the White River measured by 3 courses, 3% above normal; the Green, 3% above normal; the Snoqualmie and Skykomish, 27 and 22% above normal, respectively; the Skagit, 2% below average; and the Cedar 40% above normal.

Precipitation in this area was below normal during the fall months and 16% above normal on the northwest slope of the Cascades and 31% below normal on the southwest slopes. Taking the months of December through February, the northwest slopes of the Cascades had precipitation that was 10% above normal and the southwest slopes, 14% above. Runoff generally was above normal from all streams flowing into the Puget Sound area. Forecasts are not made by the Soil Conservation Service on any streams flowing from the Cascades into Puget Sound but flows are expected to be normal or above on all of these streams.

OLYMPIC PENINSULA

There are 7 courses on the Olympic Peninsula that are measured as of the first of March but only 2 of these courses have any length of record to be used for comparison purposes. The Elwha River as measured by one course, has snow cover that is 13% below normal. The Dungeness, as measured by one snow course, has a snowpack that is 20% below normal. Forecasts of the Dungeness River, as measured at Sequim, are for flows of 179,000 acre feet for the April-September period--this is 1% greater than the 1948-62 normal.

STREAMFLOW FORECASTS - MARCH 1965

The following summarized runoff forecasts are based principally on mountain snow cover and on the assumption that precipitation and temperature will be near average from the present time to the end of the forecast period. Appreciable deviations from normal of temperature and/or precipitation will correspondingly modify these forecasts.

Basin, Stream and Station	Forecast Runoff 1965	% 15-Yr. Avg.	Forecast Period	Seasonal Streamflow in Thousands of Acre-Feet: Measured Runoff 1964	1963	1962	15-Yr. Average 1948-62
COLUMBIA BASIN							
Columbia River System							
Columbia River at Birchbank 1/	44100	98	Apr-Sep	45907	41044	41157	45029
	34750	98	Apr-Jul	35860	31415	31340	35518
	25000	100	Apr-Jun	23138	21909	21738	24985
Columbia River at Grand Coulee 1/	73050	104	Apr-Sep	70512	57725	62285	70253
	62250	106	Apr-Jul	58420	46726	51067	58921
	43500	107	Apr-Jun	42575	35060	39833	45486
Columbia River bl. Rock Island Dam 1/	70350	103	Apr-Sep	77192	62458	67749	77312
	66100	102	Apr-Jul	64116	50902	55645	64967
	52350	105	Apr-Jun	46500	38455	43325	50178
Columbia River at The Dalles,Ore. 1/	122500	113	Apr-Sep	110401	86967	92980	108696
	104500	113	Apr-Jul	93375	71820	77320	92527
	87000	117	Apr-Jun	71485	56310	62704	74282
Pend Oreille River System							
Pend Oreille River bl. Box Canyon	20500	121	Apr-Sep		11762	15021	16905
	18700	120	Apr-Jul		10741	13911	15571
	16200	121	Apr-Jun		9144	12466	13399
Kettle River System							
Kettle River nr. Laurier	2400	117	Apr-Sep		1394	1656	2051
	2290	117	Apr-Jul		1333	1570	1952
	2115	119	Apr-Jun		1193	1433	1774

1/ Observed flow corrected for storage in any of the following reservoirs which are above the station: Kootenay Lake, Hungry Horse, Flathead Lake, Pend Oreille Lake, F. D. Roosevelt Lake, Lake Chelan, Coeur d'Alene Lake, Brownlee, Noxon Reservoir and pumpage at F. D. Roosevelt Lake.

Streamflow Forecasts - March 1965 (Cont'd)

Basin, Stream and Station	Forecast Runoff 1965	% 15-Yr. Avg.	Forecast Period	Seasonal Streamflow in Thousands of Acre-Feet: Measured Runoff 1964	1963	1962	15-Yr. Average 1948-62
Kettle River System (Cont'd)							
Colville River							
at Kettle Falls	178	95	Apr-Sep		113	126	187
	166	96	Apr-Jul		104	115	172
	153	96	Apr-Jun		97	108	159
Spokane River System *							
Spokane River							
at Post Falls,Ida. 2/	3750	110	Apr-Sep	3836	1832	3123	3413
	3650	110	Apr-Jul	3675	1770	3039	3316
	3480	110	Apr-Jun	3466	1692	2933	3158
Okanogan River System **							
Similkameen River							
nr. Nighthawk	1565	94	Apr-Sep		1218	1120	1665
	1465	94	Apr-Jul		1066	1038	1550
	1290	97	Apr-Jun		850	891	1331
Okanogan River							
at Oroville 3/	545	110	Apr-Sep	373	237	287	495
	540	110	Apr-Jul	329	239	308	493
	510	108	Apr-Jun	299	207	304	472
Okanogan River							
nr. Tonasket	1900	97	Apr-Sep		1238	1254	1957
	1725	97	Apr-Jul		1078	1140	1771
	1480	98	Apr-Jun		854	977	1502
Methow River System **							
Methow River							
nr. Pateros	1180	100	Apr-Sep		882	633	1178
	1100	100	Apr-Jul		806	570	1096
	945	100	Apr-Jun		687	483	940
Chelan River System							
Chelan River							
at Chelan 4/	1350	100	Apr-Sep		936	940	1352
	1220	101	Apr-Jul		802	827	1202
	970	102	Apr-Jun		655	651	946

* Forecasts made by Morlan W. Nelson and J. Alden Wilson, Soil Conservation Service, Boise, Idaho.

** These forecasts are based in part upon base flow data especially prepared and furnished for the purpose by the U. S. Geological Survey.

2/ Observed flow corrected for storage in Coeur d'Alene Lake and diversions by Spokane Valley Farms Company and Rathdrum Prairie Canals.

3/ Observed flow corrected for storage and diversions.

4/ Observed flow corrected for storage in Lake Chelan.

Streamflow Forecasts - March 1965 (Cont'd)

Basin, Stream and Station	Forecast Runoff 1965	% 15-Yr. Avg.	Fore-cast Period	Seasonal Streamflow in Thousands of Acre-Feet: Measured Runoff 1964	1963	1962	15-Yr. Average 1948-62
Chelan River System (Cont'd)							
Stehekin River							
at Stehekin	880	93	Apr-Sep		698	744	943
	760	94	Apr-Jul		578	629	810
	595	96	Apr-Jun		459	482	617
Wenatchee River System							
Wenatchee River							
at Plain	1415	101	Apr-Sep		860	1054	1397
	1290	102	Apr-Jul		770	952	1267
	1050	104	Apr-Jun		653	767	1013
Wenatchee River							
at Peshastin	1890	98	Apr-Sep		1166	1457	1924
	1740	99	Apr-Jul		1050	1324	1758
	1430	101	Apr-Jun		895	1069	1415
Stemilt Basin							
nr. Wenatchee	126*	--	May-Sep		138*	146*	--
Yakima River System							
Yakima River							
nr. Martin 5/	174	110	Apr-Sep	203	75	114	158
	162	111	Apr-Jul	182	70	106	146
	141	112	Apr-Jun	138	64	94	126
Yakima River							
at Cle Elum 6/	1180	113	Apr-Sep		576	842	1046
	1100	114	Apr-Jul		516	766	962
	960	115	Apr-Jun		459	678	834
Yakima River							
nr. Parker 7/	2095	104	Apr-Sep		921	1404	2016
	2075	104	Apr-Jul		942	1395	1988
	1910	105	Apr-Jun		929	1309	1826
Kachess River							
nr. Easton 8/	162	115	Apr-Sep	174	61	108	141
	155	116	Apr-Jul	160	59	102	134
	139	118	Apr-Jun	127	56	93	118

* Thousands of Miners' Inches.

5/ Observed flow corrected for storage in Lake Keechelus.

6/ Observed flow corrected for storage in Keechelus, Kachess and Cle Elum Lakes and diversion by Kittitas Canal.

7/ Observed flow corrected for storage in Keechelus, Kachess, Cle Elum, Bumping and Rimrock Lakes and diversions by Roza, Union Gap, New Reservation, Old Reservation and Sunnyside Canals.

8/ Observed flow corrected for storage in Lake Kachess.

Streamflow Forecasts - March 1965 (Cont'd)

Basin, Stream and Station	Forecast Runoff 1965	% 15-Yr. Avg.	Fore-cast Period	Seasonal Streamflow in Thousands of Acre-Feet: Measured Runoff 1964	1963	1962	15-Yr. Average 1948-62
Yakima River System (Cont'd)							
Cle Elum River							
nr. Roslyn 9/	575	110	Apr-Sep	582	285	418	525
	535	111	Apr-Jul	525	264	388	483
	455	112	Apr-Jun	402	234	334	407
Bumping River							
nr. Nile 10/	158	97	Apr-Sep	164	85	128	163
	146	97	Apr-Jul	148	78	117	151
	124	100	Apr-Jun	107	70	98	124
American River							
nr. Nile	133	95	Apr-Sep		84	105	140
	124	95	Apr-Jul		77	96	130
	105	97	Apr-Jun		67	80	108
Tieton River							
at Tieton Dam 11/	273	98	Apr-Sep	235	171	218	280
	236	98	Apr-Jul	200	141	186	241
	192	99	Apr-Jun	145	121	150	193
Naches River							
nr. Naches	964	97	Apr-Sep		586	738	991
	890	98	Apr-Jul		524	664	908
	770	99	Apr-Jun		466	568	776
Ahtanum Creeks							
nr. Tampico 13/	50	91	Apr-Sep	35	38	41	55
	46	90	Apr-Jul	31	35	38	51
	42	93	Apr-Jun	26	31	33	45
Lower Columbia River System							
Mill Creek							
nr. Walla Walla	34	100	Apr-Sep		20	27	34
	30	100	Apr-Jul		17	23	30
	27	100	Apr-Jun		15	21	27
Lewis River							
at Ariel 14/	1500	103	Apr-Sep		1119	1209	1450
	1340	104	Apr-Jul		1000	1066	1283
	1190	104	Apr-Jun		909	974	1140
Cowlitz River							
at Castle Rock 15/	3250	110	Apr-Sep		2221	2644	2954
	2900	111	Apr-Jul		1944	2333	2620
	2450	109	Apr-Jun		1711	2038	2244

9/ Observed flow corrected for storage in Lake Cle Elum.
10/ Observed flow corrected for storage in Bumping Lake.
11/ Observed flow corrected for storage in Rimrock Lake.
12/ Observed flow corrected for storage in Bumping and Rimrock Lakes and diversions by Tieton, Selah Valley, Wapatox Canals and City of Yakima.
13/ Observed flow of North and South Forks (combined).
14/ Observed flow corrected for storage in Lake Merwin, Yale and Swift Reservoirs.
15/ Observed flow corrected for storage in Mayfield Reservoir.

Streamflow Forecasts - March 1964 (Cont'd)

Basin, Stream and Station	Forecast Runoff 1965	% 15-Yr. Avg.	Forecast Period	Seasonal Streamflow in Thousands of Acre-Feet: Measured Runoff 1964	1963	1962	15-Yr. Average 1948-62
OLYMPIC PENINSULA							
Dungeness River System							
Dungeness River nr. Sequim	179	101	Apr-Sep	134	124		178
	149	101	Apr-Jul	106	100		147
	114	103	Apr-Jun	79	74		111

COMPARISON OF SNOW COVER WITH THAT OF PREVIOUS YEARS

The following tabulation of Washington stream basins presents the water content of the snow about March 1, 1965 as per cent of the same date in 1964 and 1963 and average of record.

Tributary Basin	No. of Courses Average	Years of Record	1965 Snow Water Expressed as per cent of 1964	1963	1948-62
UPPER COLUMBIA BASIN					
Pend Oreille	8 - 13	1 - 40	118	226	108*
Kettle	3 - 11	2 - 25	128	256	124*
Colville	5	3 - 6	129	532	--
Spokane	5 - 13	2 - 40	112	232	106*
Okanogan	19 - 29	2 - 25	98	178	110*
Methow	5 - 9	4 - 22	100	173	91*
Chelan	7 - 9	1 - 15	83	170	87*
Wenatchee	4 - 9	4 - 20	94	356	101*
Yakima	13 - 22	4 - 45	104	339	107*
Ahtanum	2	18 - 20	133	216	112*
LOWER COLUMBIA					
Mill Creek	3	10 - 11	83	--	98*
Klickitat	2	8 - 9	157	--	--
White Salmon	2	19 - 20	118	467	117*
Lewis	7 - 18	1 - 20	116	530	121*
Cowlitz	5 - 10	1 - 21	114	424	107*
PUGET SOUND					
Nisqually	4	8	95	288	116*
White	3	11 - 22	98	248	103*
Green	1 - 9	3 - 19	92	526	103*
Cedar	4 - 6	6 - 14	92	--	140*
Snoqualmie	1 - 3	6 - 20	102	949	127
Skykomish	2	6 - 20	99	558	122
Skagit	14	8 - 18	98	216	98*
Baker	9	5 - 8	91	199	--
Nooksack	1	8	66	163	--
OLYMPIC PENINSULA					
Skokomish	4 - 5	1 - 6	77	313	--
Elwha	1	11	84	559	87*
Dungeness	1	16	96	294	80*

* Records of less than 15 years used in computation of average

RESERVOIR STORAGE - 1000 Acre Feet

BASIN or STREAM	RESERVOIR [1]	USABLE CAPACITY	Measured (March 1) 1965	1964	1963	Normal*
		COLUMBIA				
Spokane	Coeur d'Alene Lake	889.0	175.0	50.2	172.0	167.2
Columbia	Franklin D. Roosevelt Lake	5232.0	3038.0	2792.0	2936.0	3449.8
Columbia	Banks Lake [2]	761.8	447.6	354.4	308.5	508.0
Okanogan	Conconully Reservoir	13.0	5.0	4.2	5.2	7.5
Okanogan	Salmon Lake	10.5	8.4	9.5	5.1	8.9
Chelan	Lake Chelan	676.1	286.0	221.8	379.0	259.6
		YAKIMA				
Yakima	Keechelus Lake	157.8	106.8	62.9	126.5	92.2
Kachess	Kachess Lake	239.0	189.0	140.0	216.7	178.0
Cle Elum	Lake Cle Elum	436.9	346.2	154.5	340.1	260.6
Bumping	Bumping Lake	33.7	7.7	3.7	24.0	11.7
Tieton	Rimrock Lake	198.0	150.8	96.0	173.2	121.9
		PUGET SOUND				
Skagit	Ross Reservoir [2]	1202.9	885.6	991.6	1221.1	643.3
Skagit	Diablo Reservoir	90.6	83.5	83.7	82.4	82.8
Skagit	Gorge Reservoir	9.8	8.2	7.9	8.2	--

1/ Based on Active Storage

2/ Less than 15-year record in period 1948-62

* 15-year average 1948-62

SOIL MOISTURE - March

Drainage Basin and Station	Number	Elev.	Profile (Inches) Depth	Profile (Inches) Total Capacity	Soil Moisture Content (Inches) as of March 1 1965	1964	1963
CRAB CREEK							
Creston-Kunz	18B1m	2440	48	13.6	8.24	7.28	10.39
Govan	18B2m	2100	48	13.6	Destroyed	8.35	10.08
Jack Woods	18B3m	2600	48	13.6	7.32	8.33	8.75
Krause	18B4m	2440	48	13.6	8.61	6.67	9.61
Sheffels	18B5m	2360	48	13.6	6.65	5.24	5.81
Wheatridge	18B6m	2200	48	13.6	7.87	5.60	7.57
OKANOGAN							
Trout Creek	3-M	3600	48	7.3	3.12**	3.26**	2.59*
YAKIMA							
Lake Cle Elum	21B14M	2200	48	12.8	9.14	9.16	12.36
WALLA WALLA							
Couse	17C3m	3650	48	11.1	10.57	7.61	9.51
Helmers	17C2M	4400	48	12.0	12.21	8.87	11.07

* January 1 measurement
** February 1 measurement

FALL SOIL MOISTURE

Drainage Basin and Station	Number	Elev.	Profile (Inches) Depth	Profile (Inches) Total Capacity	Soil Moisture Content (Inches) as of Oct. 1 1964	1963	1962
CRAB CREEK							
Creston-Kunz	18B1m	2440	48	13.6	5.43	5.12	9.40
Govan	18B2m	2100	48	13.6	Destroyed	5.79	9.95
Jack Woods	18B3m	2600	48	13.6	4.44	6.26	7.06
Krause	18B4m	2440	48	13.6	5.89	5.23	9.47
Sheffels	18B5m	2360	48	13.6	3.69	3.69	6.69
Wheatridge	18B6m	2200	48	13.6	4.10	4.50	7.49
OKANOGAN							
Trout Creek	3-M	3600	48	7.3	3.34	3.23	2.80
YAKIMA							
Lake Cle Elum	21B14M	2200	48	12.8	8.80	6.63	6.80
WALLA WALLA							
Couse	17C3m	3650	48	11.1	5.62	5.73	7.20
Helmers	17C2M	4400	48	12.0	6.01	5.75	7.60

PRECIPITATION 1/

Division Averages and Departures

DRAINAGE DIVISIONS	FALL Sept-Oct-Nov. 1964 2/ Average	Departure	WINTER Dec. 1964 Jan-Feb.1965 2/ Average	Departure
Columbia in Canada	7.56	+ 1.19	9.09	+ 0.30
Pend Oreille - Spokane	7.25	- 1.68	14.55	+ 2.36
Northeastern Washington	4.75	- 0.56	8.67	+ 1.39
Southeastern Washington	6.25	+ 0.38	10.89	+ 2.90
Central Washington	9.23	- 2.64	22.65	+ 3.95
North Central Washington	2.84	- 0.19	5.51	+ 0.82
Northwest Slope Cascades	21.73	- 2.31	37.39	+ 3.94
Southwest Slope Cascades	14.44	- 3.15	31.30	+ 5.17
Blue Mountains, Oregon	4.30	- 0.42	13.54	+ 6.31
Lower Columbia in Oregon	4.25	- 0.75	12.26	+ 4.08

Northeastern Washington - Lower Spokane, Colville, Sanpoil and lower Kettle drainages.

Southeastern Washington - Touchet, Tucannon and Palouse drainages.

Central Washington - Yakima, Wenatchee and Chelan drainages.

North Central Washington - Methow and Okanogan drainages.

Northwest Slope Cascades - Puget Sound drainages.

Southwest Slope Cascades - Lower Columbia drainages.

1/ - Preliminary analysis by U. S. Weather Bureau from data furnished by Meteorological Services of Canada and U. S. Weather Bureau.

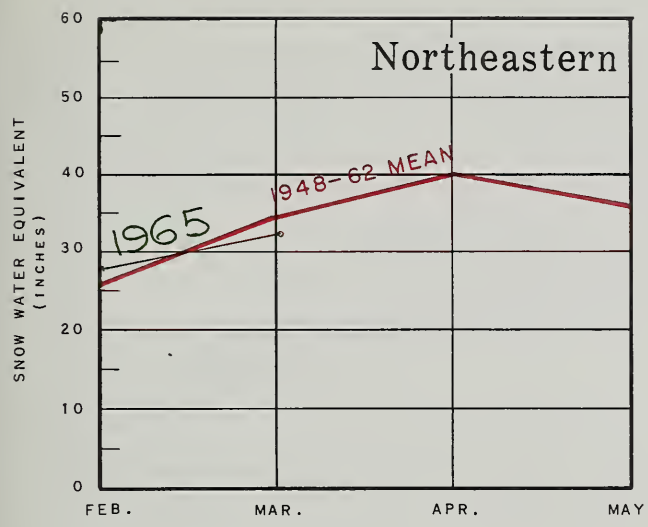
2/ - Departure from 15-year (1948-62) drainage division average.

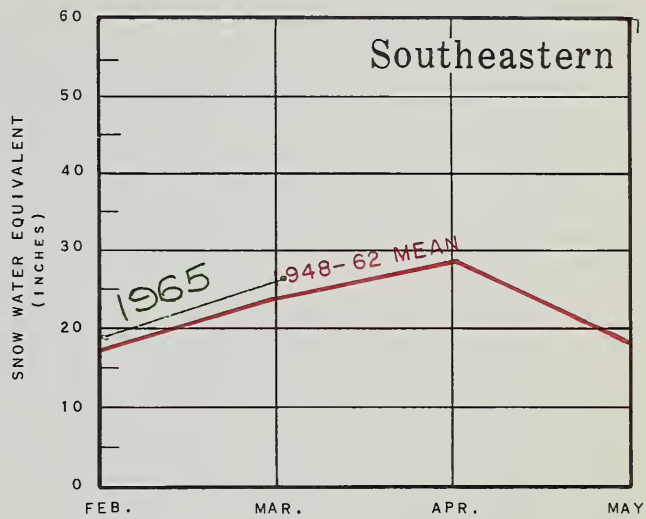
Note - Precipitation shown in inches.

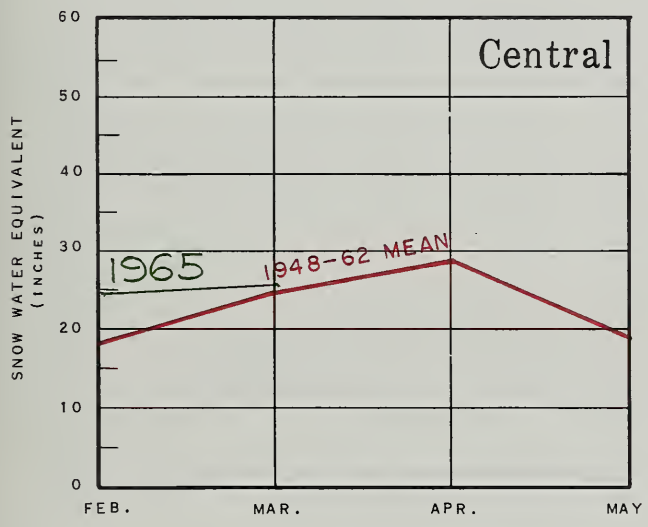
WASHINGTON SNOW COVER

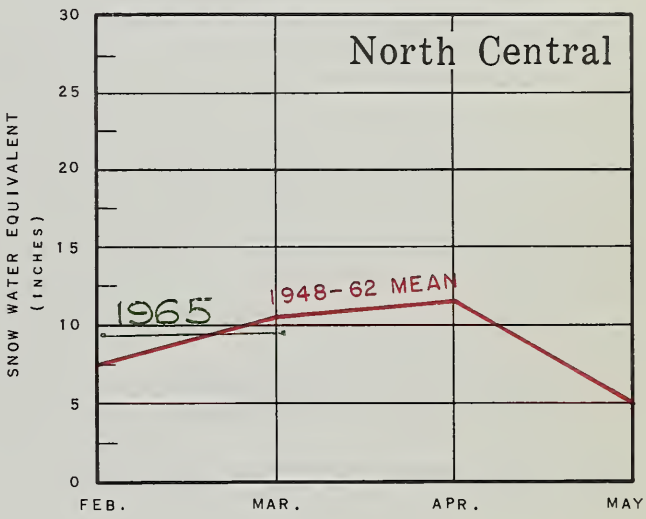
1965

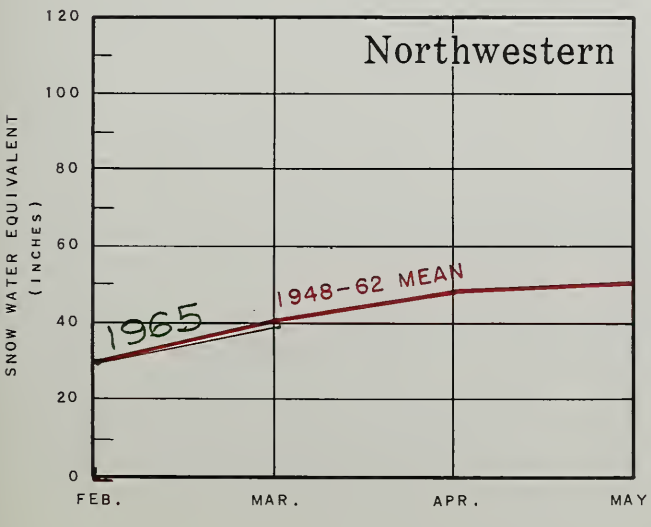
DRAINAGE AREAS

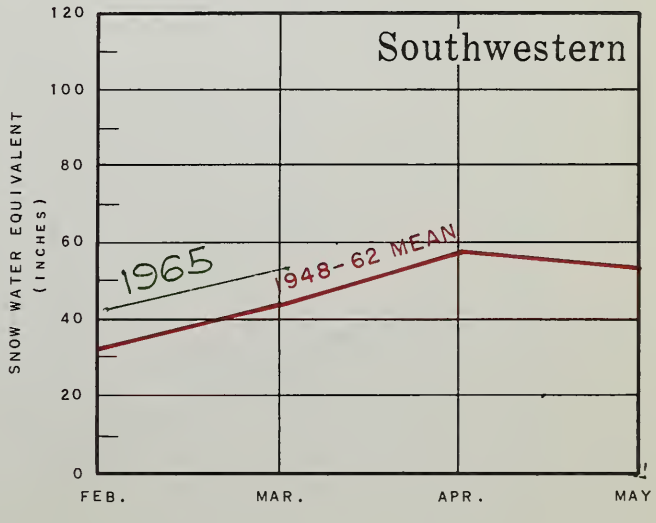










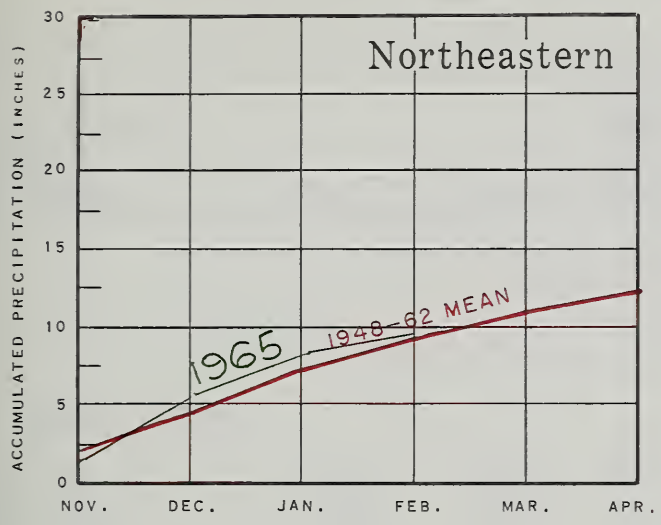


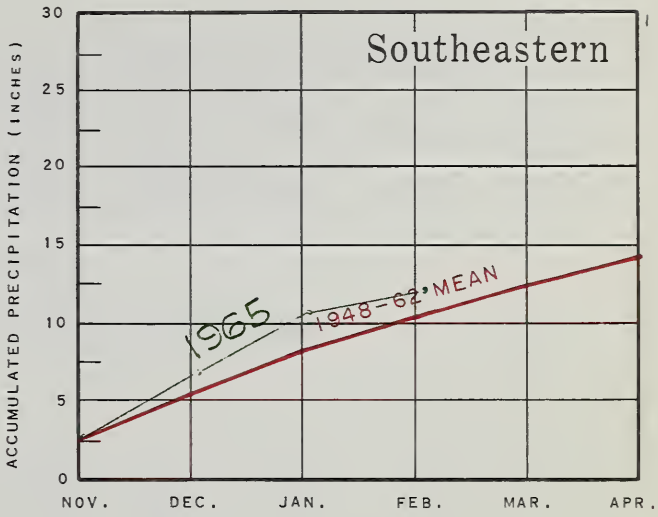
Selected Snow Survey Courses by Soil Conservation Service

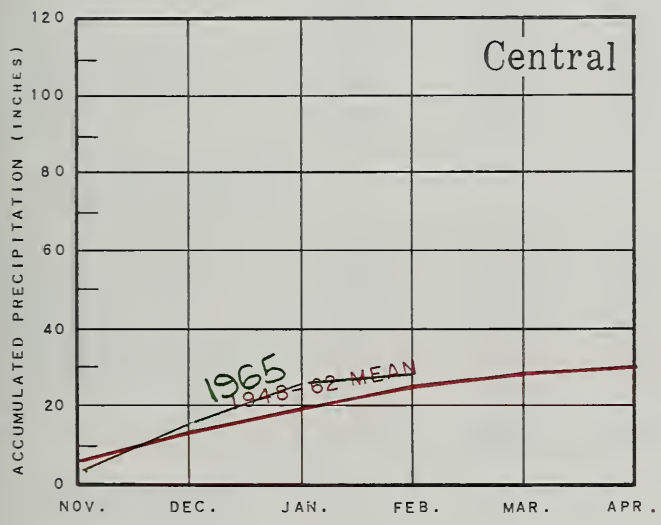
WASHINGTON VALLEY PRECIPITATION

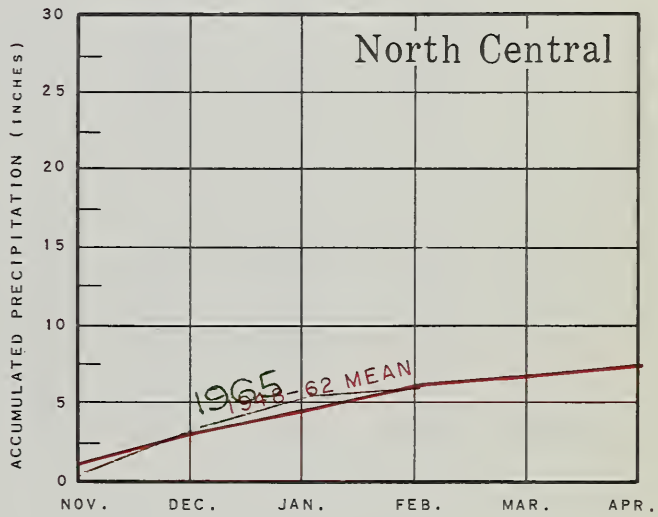
1964 - 1965

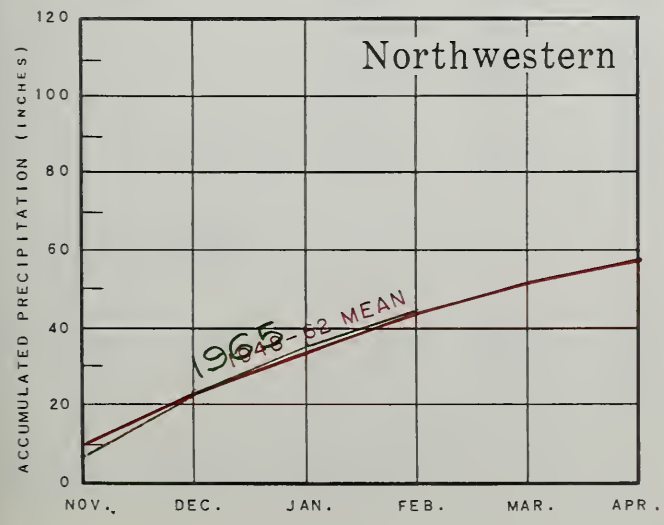
DRAINAGE AREAS

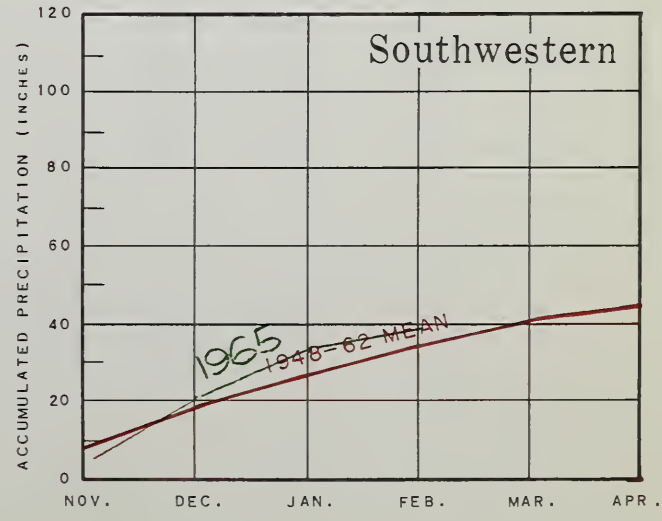












Preliminary Analysis by U. S. Weather Bureau

APPENDIX 1

SNOW DATA MARCH 1, 1965

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENT 1965 Date of Survey	Snow Depth (In.)	Water Content (In.)	Past Record Water Content (In.) 1964	1963	1948-62 Avg.
MID-MONTH SURVEYS								
Snow Surveys Made on or About February 15, 1965								
KETTLE RIVER								
Boulder Road	18A2	1450	2/12	26	7.3	6.2	0.0	--
Butte Creek	18A3	4070	2/12	40	10.8	7.6	3.3	--
Cabin Creek	18A8	3170	2/12	34	9.8	5.9	2.4	--
Goat Creek	18A4	3595	2/12	30	9.1	6.6	1.1	--
Snow Caps Creek	18A5	2150	2/12	29	8.6	5.8	0.0	--
Snow Caps Trail	18A6	2720	2/12	28	8.4	5.7	0.0	--
Summit G. S.	18A7	4600	2/12	37	10.2	7.2	4.0	--
WENATCHEE RIVER								
Berne-Mill Creek	21B23	2925	2/12	75	26.5	30.5	7.3	--
Chiwaukum G. S.	20B16	1810	2/12	42	14.0	13.7	1.4	--
Lake Wenatchee	20B5	1970	2/12	50	16.6	16.6	1.9	--
Leavenworth R. S.	20B17	1127	2/10	20	7.3	6.1	0.0	--
Merritt	20B18	2140	2/12	60	19.2	21.7	2.7	--
Stevens Pass	21B1	4070	2/12	132	52.1	55.5	18.6	41.4*
YAKIMA RIVER								
Bumping Lake	21C8	3450	2/14	51	19.2	15.0	5.8	--
Lake Cle Elum	21B14M	2200	2/14	28	12.1	14.4	0.0	--
#Stampede Pass	21B10	3000	2/19	117	43.1	38.0	16.0	39.5*
Tunnel Avenue	21B8	2450	2/15	67	27.5	32.3	5.8	--
White Pass(Ea. Side)	21C28	4500	2/16	68	25.2	23.1	9.7	--
White Pass(Leech L.)	21C27	4500	2/16	79	28.8	29.9	9.6	--
COWLITZ RIVER								
Pigtail Peak	21C33	5900	2/16	176	76.5	59.7	--	--
White Pass(Ea. Side)	21C28	4500	2/16	68	25.2	23.1	9.7	--
White Pass(Leech L.)	21C27	4500	2/16	79	28.8	29.9	9.6	--

\# Not directly on this drainage
* Adjusted 1948-62 average

APPENDIX 2

DRAINAGE DIVISION and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENT 1965 Date of Survey	Snow Depth (In.)	Water Content (In.)	Past Record Water Content (In.) 1964	1963	1948-62 Avg.
Snow Surveys Made on or About February 15, 1965 (Cont'd)								
GREEN RIVER								
Stampede Pass	21B10	3000	2/19	117	43.1	38.0	16.0	39.5*
SKYKOMISH RIVER								
#Stevens Pass	21B1	4070	2/12	132	52.1	55.5	18.6	41.4*
BAKER RIVER								
Dock Butte +	21A11A	3800	2/18	150	63.0	72.8	26.9	--
Easy Pass +	21A7A	5200	2/18	165	72.6	78.0	--	--
Jasper Pass +	21A6A	5400	2/18	188	79.0	83.6	49.2	--
Marten Lake +	21A9A	3600	2/18	166	69.7	78.4	32.6	--
Mount Blum +	21A18A	5800	2/18	198	83.2	68.0	--	--
#Panorama	21A5	4300	2/15	171	70.9	77.6	38.5	--
Rocky Creek +	21A12A	2100	2/18	79	31.6	33.2	2.4	--
Schreibers Meadow +	21A10A	3400	2/18	123	51.7	66.0	23.0	--
S.F. Thunder Creek +	21A14A	2200	2/18	12	4.8	5.0	0.0	--
Watson Lakes +	21A8A	4500	2/18	150	63.0	61.6	26.7	--
NOOKSACK RIVER								
Panorama	21A5	4300	2/15	171	70.9	77.6	38.5	--

* Adjusted 1948-62 average
\# Not located directly on this drainage
\+ Snow water equivalent estimated from aerial stadia observations

APPENDIX 3

SNOW DATA MARCH 1, 1965

RAINAGE BASIN and NOW COURSE	No.	Elev.	SNOW COVER MEASUREMENT 1965 Date of Survey	1965 Snow Depth (In.)	1965 Water Content (In.)	Past Record Water Content (In.) :1964	1963	1948-62 Avg.
U P P E R C O L U M B I A D R A I N A G E								
PEND OREILLE RIVER								
aree Creek	15B11	5500	3/1	122	45.8	31.8	--	--
enton Meadow	16A2	2344	2/26	28	10.1	7.8	0.4	6.5
enton Spring	16A3	4900	2/26	55	17.3	19.0	7.8	20.2
oyer Mountain	17A2	5250	2/21	78	28.2	24.8	13.0	25.3
rush Creek	14A4	5000	3/1	38	13.2	11.8	5.2	12.7*
Chewelah	17A4	4925	2/27	67	22.8	16.5	8.1	--
oodoo Creek	15C1	5900	2/25	133	52.3	37.4	28.0	45.3*
ookout	15B2	5250	2/25	97	33.5	31.7	19.3	34.8*
osquito Ridge +	16A4A	5100	2/25	117	44.7	38.1	19.6	--
elson	Canada	3050	3/1	55	18.8	15.6	7.1	16.2
chweitzer Bowl	16A6	4500	2/26	81	29.0	29.2	--	--
chweitzer Ridge	16A5	6100	2/26	114	43.5	41.2	--	--
inchester Creek	17A3	2970	2/27	44	14.4	11.7	4.3	13.4*
KETTLE RIVER								
arnes Creek	Canada	5300	2/26	74	22.0	16.8	15.2	--
oulder Road	18A2	1450	Not Measured			5.8	0.0	--
utte Creek	18A3	4070	2/26	38	11.9	7.6	3.3	--
abin Creek	18A8	3170	2/26	31	10.4	7.1	2.0	--
armi	Canada	4100	2/28	32	9.4	6.4	2.2	--
arron	Canada	4000	3/1	49	15.5	12.7	6.2	13.2
oat Creek	18A4	3595	2/26	26	8.7	6.0	0.0	--
onashee Pass	Canada	4500	2/26	55	15.9	12.8	10.5	12.4**
ld Glory Mountain	Canada	7000	2/28	81	30.1	28.5	15.3	23.9**
now Caps Creek	18A5	2150	2/26	24	7.7	5.5	0.0	--
now Caps Trail	18A6	2720	2/26	26	8.6	6.2	0.0	--
ummit G. S.	18A7	4600	2/26	34	10.0	7.4	4.0	--
COLVILLE RIVER								
aird	17A6	3215	2/24	34	10.5	7.6	0.0	--
arlson	18A9	2885	2/23	22	7.7	6.5	0.0	--
hewelah	17A4	4925	2/27	67	22.8	16.5	8.1	--

+ Not directly on this drainage
* Adjusted 1948-62 average
** Average for years of record
Snow water equivalent estimated from aerial studio observations

APPENDIX 4

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENT 1965 Date of Survey	Snow Depth (In.)	Water Content (In.)	Past Record Water Content (In.) 1964	1963	1948-62 Avg.
COLVILLE RIVER (Cont'd)								
Stranger Mountain	17A5	4990	2/23	52	18.0	14.9	3.4	--
Togo	18A10	3370	2/26	43	14.9	11.7	2.4	--
SPOKANE RIVER								
Copper Ridge	16B2	4800	3/2	85	34.1	32.1	10.4	27.8
Forty-nine Meadows	15B3	5000	2/23	93	32.3	30.3	12.9	32.1*
4th of July Summit	16B3	3100	2/25	32	9.6	13.0	0.0	11.0*
Granite Peak	15B13A	6000	2/23	123	47.6	34.5	28.5	--
Medicine Ridge	15B4A	6150	2/24	129	50.3	35.1	33.0	--
#Mosquito Ridge +	16A4A	5110	2/25	117	44.7	38.1	19.6	--
Outlaw Creek	15B12A	3750	2/23	52	16.4	14.4	4.9	--
Roland Summit +	15B5A	5200	2/25	104	35.9	34.2	13.8	--
Sherwin	16C1	3200	2/28	49	17.2	18.4	3.7	--
Sunset +	15B9A	5600	2/25	118	40.7	37.0	18.0	--
KelloggPeak +	16B5A	5560	2/25	90	31.0	30.3	7.7	--
#Lookout	15B2	5250	2/25	97	33.5	31.7	19.3	34.8*
Lower Sands Creek	16B1	3400	3/2	63	22.2	22.8	7.0	19.1*
OKANOGAN RIVER								
Aberdeen Lake	Canada	4300	3/1	28	7.2	5.2	2.0	5.8**
Blackwall Mountain	Canada	6250	3/1	81	29.4	37.8	20.5	--
Bouleau Creek	Canada	5000	2/27	43	12.9	11.5	4.1	9.3**
Brookmere	Canada	3200	2/28	27	7.6	10.2	5.5	9.6
Clark +	19A8a	7000	3/3	57	17.1	19.8	12.9	--
Copper Mountain	Canada	4300	Late Report			6.2	1.7	6.1**
#Freezeout Meadows	20A2	5000	2/25	93	34.9	28.1	13.9	29.7*
Hamilton Hill	Canada	4900	2/28	49	13.4	13.3	9.0	12.2**
#Harts Pass	20A5A	6500	3/1	116	40.0	40.5	28.6	41.6*
#Horseshoe Basin +	19A5a	7000	2/26	36	11.2	14.7	4.0	--
Lost Horse Mountain	Canada	6300	2/24	28	7.1	8.6	--	--
#Loup Loup	19A7	4650	2/24	29	8.7	8.4	2.8	--
McCulloch	Canada	4200	2/26	30	8.1	7.7	2.8	6.4
Missezula Mountain	Canada	5100	3/3	32	7.5	8.1	--	--
Mission Creek	Canada	6000	2/26	68	20.5	18.5	12.0	15.1**

\+ Snow water equivalent estimated from aerial stadia observations
\# Not located directly on this drainage
* Adjusted 1948-62 average
** Average for years of record

APPENDIX 5

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENT 1965 Date of Survey	1965 Snow Depth (In.)	1965 Water Content (In.)	Past Record Water Content (In.) 1964	1963	1948-62 Avg.
OKANOGAN RIVER (Cont'd)								
Monashee Pass	Canada	4500	2/26	55	15.9	12.8	10.5	12.4**
Muckamuck +	19A9a	6390	3/3	36	10.8	11.6	9.9	--
Mutton Creek No. 1	19A1	5700	2/24	35	11.3	10.8	5.4	13.3*
Mutton Creek No. 2	19A4	6000	2/24	39	12.2	10.9	6.4	13.9
New Copper Mtn.	Canada	4300	2/28	21	5.5	6.3	1.9	5.4**
Nickel Plate Mtn.	Canada	6200	3/2	28	7.9	11.1	4.3	6.5**
Paysayten +	20A28a	4300	2/26	48	14.9	16.5	9.8	--
Postill Lake	Canada	4500	2/26	32	8.8	7.0	4.1	7.2**
Rusty Creek	19A3	4000	2/27	24	6.5	6.3	1.1	7.9
Salmon Meadows	19A2	4500	2/24	34	9.6	8.5	4.6	10.8*
Silver Star Mtn.	Canada	6050	2/26	73	25.0	25.8	14.2	18.8**
Starvation Mtn. +	19A10a	6750	3/3	48	14.4	18.2	13.9	--
Summerland Reservoir	Canada	4200	2/27	33	9.1	9.2	4.5	--
Touts Coulee	19A6	2845	2/26	16	4.9	4.2	0.0	--
Trout Creek	Canada	4700	2/27	29	7.9	7.2	3.5	7.0
White Rocks Mtn.	Canada	6000	2/25	62	19.9	20.0	9.4	16.3**
METHOW RIVER								
Billy Goat Pass +	20A10a	6400	2/26	91	28.2	26.4	16.0	--
Dollar Watch +	20A29a	7000	2/26	70	21.7	23.4	17.6	--
Harts Pass	20A5A	6500	3/1	116	40.0	40.5	28.6	41.6*
Horseshoe Basin +	19A5a	7000	2/26	36	11.2	14.7	4.0	--
Loup Loup	19A7	4650	2/24	29	8.7	8.4	2.8	--
#Mutton Creek No. 1	19A1	5700	2/24	35	11.3	10.8	5.4	13.3*
#Mutton Creek No. 2	19A4	6000	2/24	39	12.2	10.9	6.4	13.9*
#Rusty Creek	19A3	4000	2/27	24	6.5	6.3	1.1	7.9
#Salmon Meadows	19A2	4500	2/24	34	9.6	8.5	4.6	10.8*
CHELAN LAKE BASIN								
Cloudy Pass +	20A22a	6500	2/26	107	33.2	35.3	19.6	38.2*
Greenwood Flat +	20A25a	3540	2/26	55	17.0	26.3	4.2	24.5*
Little Meadows +	20A24a	5275	2/26	114	35.3	41.0	17.6	41.0*
Lyman Lake +	20A23A	5900	2/26	139	43.1	55.8	27.3	53.0*
Park Creek Flat +	20A13A	2220	2/26	95	29.4	36.0	18.2	32.0*
Park Creek Ridge +	20A12A	4600	2/26	117	36.3	49.7	23.3	--
Petersons +	21A16a	3730	2/26	108	33.5	37.8	22.0	33.3*
Rainy Pass	20A9	4780	3/1	119	36.2	36.3	21.3	39.4*

\+ Snow water equivalent estimated from aerial stadia observations
\# Not located directly on this drainage
* Adjusted 1948-62 average
** Average for years of record

APPENDIX 6

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENT 1965 Date of Survey	Snow Depth (In.)	Water Content (In.)	Past Record Water Content (In.) 1964	1963	1948-62 Avg.
CHELAN LAKE BASIN (Cont'd)								
Safety Harbor +	20A30A	6300	2/26	65	20.2	--	13.9	--
#War Creek Pass +	20A31a	6500	Not Measured					
ENTIAT RIVER								
Brief	20B19	1600	2/21	22	8.1	9.6	0.0	--
WENATCHEE RIVER								
Berne-Mill Creek	21B23	2925	2/26	68	25.5	30.2	5.4	--
Blewett Pass No. 2	20B2	4270	2/26	47	17.3	15.1	0.0	16.3
Chiwaukum G. S.	20B16	1810	2/26	38	14.0	12.6	0.0	--
#Fish Lake	21B4	3371	3/2	95	35.8	31.8	12.6	35.1*
Lake Wenatchee	20B5	1970	2/26	43	17.1	16.3	0.9	--
Leavenworth R. S.	20B17	1127	2/25	12	5.0	3.4	0.0	--
#Lyman Lake +	20A23A	5900	2/26	139	43.1	55.8	27.3	53.0*
Merritt	20B18	2140	2/26	46	16.8	20.8	0.0	--
Stevens Pass	21B1	4070	2/26	135	56.1	58.3	18.6	45.9
SQUILCHUCK CREEK								
Beehive Springs	20B3	4400	2/25	21	10.0	9.0	0.0	7.0*
Scout-A-Vista	20B4	3400	2/25	22	9.5	8.2	1.6	8.0*
STEMILT CREEK								
Jump-Off	20B8	4450	2/25	24	9.6	6.4	0.0	--
Stemilt Slide	20B6	5000	2/25	40	14.3	10.8	3.2	--
Upper Wheeler	20B7	4400	2/25	27	10.9	9.7	0.0	--
YAKIMA RIVER								
Ahtanum R. S.	21C11	3100	2/23	24	7.9	5.2	0.0	7.3*
Big Boulder Creek	21B9	3200	3/2	62	23.1	24.9	3.7	20.7*
#Blewett Pass No. 2	20B2	4270	2/26	47	17.3	15.1	0.0	16.3
Bumping Lake	21C8	3450	2/25	47	17.6	17.5	5.6	17.4
#Cayuse Pass	21C6	5300	2/22	192	74.0	84.7	29.2	79.0*

\+ Snow water equivalent estimated from aerial stadia observations
\# Not located directly on this drainage
* Adjusted 1948-62 average
** Average for years of record

APPENDIX 7

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENT 1965 Date of Survey	Snow Depth (In.)	Water Content (In.)	Past Record Water Content (In.) 1964	1963	1948-62 Avg.
YAKIMA RIVER (Cont'd)								
Clockum Pass	20B9	5370	3/1	49	15.7	11.1	5.4	--
Cooke Creek	20B10	4123	3/1	25	8.1	6.8	0.0	--
#Corral Pass	21B13	6000	Late Report			33.5	16.7	39.7*
Fish Lake	21B4	3371	3/2	95	35.8	31.8	12.6	35.1*
Green Lake	21C10	6000	2/23	85	31.0	24.0	18.0	27.3*
Grouse Camp	20B11	5385	3/1	66	20.9	12.3	4.3	--
High Creek	20B12	2930	3/2	23	6.9	6.1	0.0	--
Lake Cle Elum	21B14M	2200	2/25	24	11.5	13.0	0.0	11.0
Manashtash	20C1	3935	3/2	0	0.0	5.2	0.0	--
Morse Lake	21C17	5400	2/24	138	53.9	49.2	27.4	49.3*
Nanum	20B13	3875	3/1	37	12.4	9.8	0.0	--
#Olallie Meadows	21B2	3625	2/25	127	56.7	56.3	11.0	44.6
#Satus Pass	20D1	4030	2/26	30	11.8	10.3	0.0	--
#Stampede Pass	21B10	3000	2/26	116	44.6	41.6	17.2	43.4*
Trail Creek	20B14	3360	3/2	0	0.0	4.2	0.0	--
Tunnel Avenue	21B8	2450	2/25	63	25.8	31.4	6.7	25.1
Walters Flat	20B15	3360	3/2	26	8.7	7.4	0.0	--
White Pass(Ea.Side)	21C28	4500	2/26	68	26.0	25.1	9.0	21.5*
White Pass(Leech L.)	21C27	4500	2/27	80	32.0	32.0	9.7	--
AHTANUM CREEK								
Ahtanum R. S.	21C11	3100	2/23	24	7.9	5.2	0.0	7.3*
Green Lake	21C10	6000	2/23	85	31.0	24.0	18.0	27.3*
LOWER COLUMBIA DRAINAGE								
ASOTIN CREEK								
Spruce Springs	17C4	5700	2/25	89	32.9	New Course		
MILL CREEK								
Homestead	17C1	4030	2/26	28	9.6	9.7	0.0	9.1*
Martin Springs	17C2	4400	2/26	46	15.9	15.5	0.0	14.2*
Walla Walla Div.	18D13	2400	2/27	0	0.0	5.5	0.0	2.8*

Not directly on this drainage
* Adjusted 1948-62 average

APPENDIX 8

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENT 1965 Date of Survey	1965 Snow Depth (In.)	1965 Water Content (In.)	Past Record Water Content (In.) 1964	1963	1948-62 Avg.
KLICKITAT RIVER								
Satus Pass	20D1	4030	2/26	30	11.8	10.3	0.0	--
West Fork Cabin	21C15	3000	2/25	38	15.9	7.3	0.0	--
WHITE SALMON RIVER								
Cultus Creek	21C12	4000	2/28	124	48.2	40.5	11.1	42.8*
#Surprise Lakes	21C13A	4250	2/28	131	54.0	45.9	10.8	44.8*
WIND RIVER								
Oldman Pass	21D19	3100	3/1	68	29.6	17.2	0.0	13.7*
LEWIS RIVER								
Blue Lake +	21C22a	4800	3/1	177	74.3	71.1	26.2	--
Bob's Trail	21C21	2200	2/27	53	22.3	14.8	0.0	--
Calamity Ridge +	22D1a	2500	3/1	10	4.4	4.4	0.0	--
Council Pass +	21C18a	4200	3/1	107	43.9	44.9	6.4	34.2*
#Cultus Creek	21C12	4000	2/28	124	48.2	40.5	11.1	42.8
Divide Meadow +	21C29a	5600	3/1	143	54.3	50.1	20.8	--
Grand Meadow	21C25	3500	2/27	86	33.6	24.2	5.8	--
Lone Pine Shelter	21C26	3800	2/25	98	41.8	34.8	6.4	--
Marble Mountain	22C5a	3200	3/1	69	32.6	29.0	0.8	--
#Mosquito Meadows	21C19	4100	2/25	112	47.2	38.3	9.2	36.2*
New Muddy River	22C6	2000	2/24	34	15.2	9.8	--	--
Oldman Pass	21D19	3100	3/1	68	29.6	17.2	0.0	13.7*
Plains of Abraham +	22C1a	4400	3/1	139	58.4	55.0	16.3	60.6*
Smith Creek Road	22C4	2100	2/24	61	28.6	10.6	0.0	--
Spencer Meadow	21C20a	3400	3/1	60	23.8	23.5	0.0	20.2*
Surprise Lakes	21C13A	4250	2/28	131	54.0	45.9	10.8	44.8*
Table Mountain +	21C24a	4200	3/1	117	48.0	48.0	10.4	--
Timbered Peak +	21D18a	3000	3/1	40	18.0	20.2	1.0	--
COWLITZ RIVER								
Cayuse Pass	21C6	5300	2/22	192	74.0	84.7	29.2	79.0*
Mosquito Meadows	21C19	4100	2/25	112	47.2	38.3	9.2	36.2*
Ohanapecosh	21C32	2200	2/25	56	23.6	12.0	0.0	--

\+ Snow water equivalent estimated from aerial stadia observations
\# Not located directly on this drainage
* Adjusted 1948-62 average

APPENDIX 9

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENT 1965 Date of Survey	Snow Depth (In.)	Water Content (In.)	Past Record Water Content (In.) 1964	1963	1948-62 Avg.
COWLITZ RIVER (Cont'd)								
Packwood Lake	21C31	2870	2/26	44	18.3	11.1	0.0	--
Pigtail Peak	21C33	5900	2/25	179	78.6	67.5	--	--
Plains of Abraham +	22C1a	4400	3/1	139	58.4	55.0	16.3	60.6*
Potato Hill	21C14	4500	2/25	84	33.8	29.6	4.0	26.1*
#White Pass(Ea.Side)	21C28	4500	2/26	68	26.0	25.1	9.0	21.5
#White Pass(Leech L.)	21C27	4500	2/25	80	32.0	32.0	9.7	--
Willame Creek	21C30	3250	2/27	97	45.9	29.9	7.4	--
PUGET SOUND DRAINAGE								
NISQUALLY RIVER								
Ghost Forest	21C4	4550	2/24	118	43.8	52.2	11.0	40.2*
Longmire	21C3	2760	2/24	47	16.5	15.5	0.0	8.1*
Paradise Park	21C2	5500	2/24	195	82.6	81.7	32.1	68.7*
Stem Glade	21C1	5050	2/24	173	67.1	70.6	29.9	63.8*
WHITE RIVER								
#Cayuse Pass	21C6	5300	2/22	192	74.0	84.7	29.2	79.0*
Corral Pass	21C13	6000	Late Report			33.5	16.7	39.7*
#Morse Lake	21C17	5400	2/21	138	53.9	49.2	27.4	49.3*
White Riv. Entr. New	21C16	3400	2/22	42	12.5	8.8	0.0	7.4*
GREEN RIVER								
Airstrip	21B24	1800	2/24	16	7.0	10.0	0.0	--
Charley Creek	21B25	1200	2/24	0	0.0	0.0	0.0	--
Grass Mtn. No. 1	21B26	4000	2/24	64	25.2	30.7	0.0	--
Grass Mtn. No. 2	21B27	2900	2/24	60	22.8	28.2	0.0	--
Grass Mtn. No. 3	21B28	2100	2/24	7	1.5	9.5	0.0	--
Lester Creek	21B29	3100	2/24	72	25.8	26.7	0.0	--
Sawmill Ridge	21B31	4700	2/24	114	45.8	41.6	14.2	--
Stampede Pass	21B10	3000	2/26	116	44.6	41.6	17.2	43.4*
Twin Camp	21B30	4100	2/24	80	30.8	32.8	7.3	--

\+ Snow water equivalent estimated from aerial stadia observations
\# Not located directly on this drainage
* Adjusted 1948-62 average

APPENDIX 10

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENT 1965 Date of Survey	Snow Depth (In.)	Water Content (In.)	Past Record Water Content (In.) 1964	1963	1948-62 Avg.
CEDAR RIVER								
City Cabin	21B3	2390	2/25	62	26.3	26.0	0.0	16.9*
Mt. Gardner	21B21	3300	3/1	57	24.3	27.3	0.0	--
Mt. Lindsay	21B16	2500	3/1	57	23.8	20.5	0.0	13.2*
Mt. Washington	21B15	3000	2/25	17	7.6	16.4	0.0	7.1*
Rex River	21B17	2400	2/25	Not Measured		24.7	0.0	14.3*
S. F. Cedar	21B6	3000	2/25	65	27.6	28.5	0.0	23.5*
Tinkham Creek	21B20	3400	2/25	78	29.9	33.6	0.0	--
SNOQUALMIE RIVER								
#Lake Elizabeth	21B19	2900	2/28	121	47.7	46.1	0.0	--
Olallie Meadows	21B2	3625	2/25	127	56.7	56.3	11.0	44.6
S. F. Tolt	21B18	1900	2/28	0	0.0	0.0	0.0	--
SKYKOMISH RIVER								
Lake Elizabeth	21B19	2900	2/28	121	47.7	46.1	0.0	--
#Stevens Pass	21B1	4070	2/26	135	56.1	58.3	18.6	45.9
SKAGIT RIVER								
Beaver Creek Trail	21A4	2200	2/24	45	17.3	16.9	1.0	16.0*
Beaver Pass	21A1	3680	2/24	71	27.6	35.7	11.2	32.7*
#Cloudy Pass	20A22A	6500	2/26	107	33.2	35.3	19.6	38.2*
Devils Park	20A4	5900	3/1	119	39.8	42.9	27.7	41.3*
Freezeout Cr. Trail	20A1	3500	2/25	39	14.1	13.1	4.2	13.7*
Freezeout Meadows	20A2	5000	2/25	93	34.9	28.1	13.9	29.7*
#Harts Pass	20A5A	6500	3/1	116	40.0	40.5	28.6	41.6*
Klesilkwa	Canada	3700	3/2	42	13.2	11.2	1.0	12.5**
Lake Hozomeen	21A2	2600	2/25	30	10.4	9.6	1.9	11.0*
#Lyman Lake	20A23A	5900	2/26	139	43.1	55.8	27.3	53.0*
Meadow Cabins	20A8	1900	3/1	38	15.1	7.9	0.3	8.0*
New Tashme	Canada	2500	3/1	40	15.8	13.0	1.3	11.3
#Rainy Pass	20A9	4780	3/1	119	36.2	36.3	21.3	39.4*
Thunder Basin	20A7	4200	3/1	70	22.8	24.3	8.8	22.9*

\# Not directly on this drainage
* Adjusted 1948-62 average

APPENDIX 11

DRAINAGE BASIN and SNOW COURSE	No.	Elev.	SNOW COVER MEASUREMENT 1965 Date of Survey	Snow Depth (In.)	Water Content (In.)	Past Record Water Content (In.) 1964	1963	1948-62 Avg.
BAKER RIVER								
Dock Butte +	21A11A	3800	2/28	162	64.8	68.9	32.2	--
Easy Pass +	21A7A	5200	2/28	190	79.8	97.3	54.4	--
Jasper Pass +	21A6A	5400	2/28	205	82.0	91.6	50.7	--
Marten Lake +	21A9A	3600	2/28	202	80.8	77.8	35.7	--
Mount Blum +	21A18a	5800	2/28	208	83.2	--	--	--
#Panorama	21A5	4300	2/24	164	61.0	91.8	37.4	--
Rocky Creek +	21A12A	2100	2/28	92	35.0	25.8	1.3	--
Schreibers Meadow +	21A10A	3400	2/28	146	58.4	63.5	28.0	--
S.F. Thunder Cr. +	21A14A	2200	2/28	26	9.9	8.3	0.0	--
Watson Lakes +	21A8A	4500	2/28	160	64.0	64.0	30.0	--
NOOKSACK RIVER								
Panorama	21A5	4300	2/24	164	61.0	91.8	37.4	--
O L Y M P I C P E N I N S U L A								
DUNGENESS RIVER								
Deer Park	23B4	5200	2/24	49	19.7	20.5	6.7	24.5*
MORSE CREEK								
Deer Park G. S.	23B13	4850	2/24	36	15.6	New Course		
Morse Creek	23B12	5425	2/23	96	38.7	38.1	--	--
ELWHA RIVER								
Hurricane	23B3	4500	2/23	58	21.8	26.1	3.9	25.1*
SKOKOMISH RIVER								
Black & White	23B7	4200	2/25	81	33.2	47.2	0.0	--
Black & White Lakes	23B6	4700	2/25	102	44.9	56.9	16.2	--
Four Stream	23B10	3000	2/25	55	25.7	25.6	--	--
Home Sweet Home	23B5	5200	2/25	135	55.7	82.0	37.8	--
Sundown Pass	23B8	3900	3/1	127	53.9	64.4	6.0	--

\+ Snow water equivalent estimated from aerial stadia observation
* Adjusted 1948-62 average
\# Not located directly on this drainage

Agencies Assisting with Snow Surveys

GOVERNMENT AGENCIES

Canada:

Department of Lands, Forests and Water Resources,
Water Resources Service, British Columbia

States:

Washington State Department of Conservation
Washington State Department of Natural Resources

Federal:

Department of the Army
  Corps of Engineers
U. S. Department of Agriculture
  Forest Service
U. S. Department of Commerce
  Weather Bureau
U. S. Department of the Interior
  Bonneville Power Administration
  Bureau of Reclamation
  Geological Survey
  National Park Service

PUBLIC AND PRIVATE UTILITIES

Chelan County P.U.D.
Pacific Power and Light Company
Puget Sound Power and Light Company
Washington Water Power Company

OTHER PUBLIC AGENCIES

Okanogan Irrigation District
Wenatchee Heights Irrigation District

MUNICIPALITIES

City of Walla Walla
City of Tacoma
City of Seattle

Other organizations and individuals furnish valuable information for snow survey reports. Their cooperation is gratefully acknowledged.

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